Consumers and the conceptual and practical appropriation of functional foods

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Mari Niva

Abstract

Issues relating to health and healthiness have gained a prominent role in the contemporary discussion of food. Healthy eating has become a target of public health campaigns, a subject of intense public debate, and a salient part of the market for food. In the 1990s, foods marketed as 'functional' entered the market in Finland and elsewhere. The products claim to improve health and well-being or reduce the risk of disease beyond the usual nutritional effects of foods. From the consumer's perspective, functional foods represent new kinds of foods that differ from conventional foods in their targeted health effects.

Taking the appropriation of objects as a theoretical starting point, this study examines both the conceptual and the practical appropriation of functional foods in everyday life. The study uses the concept of appropriation to understand the adoption and the process of making functional foods 'our own'. First, the study focuses on the conceptual appropriation by analysing consumers' interpretations and opinions on functional foods. Second, it analyses the use of functional foods and examines the role of sociodemographic and food- and health-related background factors in the use of functional foods.

Both quantitative and qualitative data were used in the study. Altogether 1210 Finns representative of the population took part in a survey carried out in 2002 as computer-assisted telephone interviews (CATI). The survey examined the acceptability and use of functional foods in Finland. In 2004, eight focus group discussions were organised for 45 users and non-users of cholesterol-lowering spreads. The qualitative study focused on consumers' interpretative perspectives on healthy eating and functional foods. The findings are reported in four original articles and a summary article.

The results show that the appropriation of functional foods is a multifaceted phenomenon. The conceptual appropriation is related to consumers' interpretations of functional foods in the context of healthy foods and healthy eating; their trust in the products, their manufacturers, research and control; and the relationship of functional foods and the ideal of natural foods. The analysis of the practical appropriation of four different types of foods marketed as functional showed that there are sociodemographic differences between users and non-users of the products, but more importantly, the differences are related to consumers' food- and health-related views and practices. Consumers' ways of appropriating functional foods in the conceptual and practical sense take shape in a

complex web of ideas and everyday practices concerning food, health and eating as a whole.

The results also indicate that the conceptual and practical appropriation are not necessarily uniform or coherent processes. Consumers interpret healthy eating and functional foods from a variety of perspectives and there is a multiplicity of rationales of using functional foods. Appropriation embraces many opposing dimensions simultaneously: good experiences and doubts, approval and criticism, expectations and things taken for granted. Such apparent inconsistencies are part of the mundane world of experience revealed on examining appropriation by various approaches, data and methods.

Tiivistelmä

Ruokaa koskevat käsitykset ja jäsennykset kertovat siitä sosiaalisesta ja kulttuurisesta ympäristöstä, jossa elämme. Modernia kulutusyhteiskuntaa luonnehtiva piirre on terveellisyyden näkyvyys ruokaa koskevassa keskustelussa. Terveellinen syöminen on vakioaihe tiedotusvälineissä, terveyden edistämisen kampanjoissa sekä keskeinen osa ruoan markkinoita ja markkinointia. 1990-luvulla markkinoille tulivat terveysvaikutteiset eli funktionaaliset elintarvikkeet, joiden kerrotaan edistävän terveyttä ja hyvinvointia tai vähentävän sairauden riskiä tavanomaisista elintarvikkeista poikkeavalla tavalla. Kuluttajien näkökulmasta terveysvaikutteisten elintarvikkeiden kohdennetut vaikutukset edustavat siten uudenlaista, aikaisemmasta poikkeavaa terveellisyyttä.

Tässä tutkimuksessa tarkastellaan sitä, kuinka kuluttajat ottavat terveysvaikutteiset elintarvikkeet haltuun yhtäältä käsitteellisesti, toisaalta käytännöllisesti. Teoreettisena lähtökohtana on materiaalisten objektien haltuunoton tutkimus, jonka kohteena ovat tuotteiden ja teknologioiden omaksumisen ja omaksi tekemisen prosessit. Tutkimuksessa terveysvaikutteisten elintarvikkeiden haltuunottoa analysoidaan kahdesta näkökulmasta. Käsitteellistä haltuunottoa lähestytään tarkastelemalla kuluttajien tulkintoja ja näkemyksiä tuotteista, käytännöllistä haltuunottoa tutkimalla sosiodemografisten ja ruokaan ja terveyteen liittyvien taustatekijöiden merkitystä terveysvaikutteisten elintarvikkeiden käytössä.

Tutkimuksessa käytettiin sekä määrällistä että laadullista aineistoa. Vuonna 2002 tehtiin tietokoneavusteisena puhelinhaastatteluna (CATI) toteutettu kysely, johon vastasi yhteensä 1210 suomalaista. Aineisto edusti väestöä iän, sukupuolen ja asuinpaikan suhteen. Kyselyn kohteena oli terveysvaikutteisten elintarvikkeiden hyväksyttävyys ja käyttö Suomessa. Tutkimuksen laadullinen aineisto koostuu vuonna 2004 toteutetusta kahdeksasta ryhmäkeskustelusta, joihin osallistui 45 kolesterolia alentavien levitteiden käyttäjää. Ryhmäkeskustelujen avulla tarkasteltiin kuluttajien tulkintoja terveellisyydestä ja terveysvaikutteisista elintarvikkeista. Määrällisen ja laadullisen osion tulokset raportoidaan neljässä aikaisemmin julkaistussa englanninkielisessä artikkelissa sekä yhteenvedossa.

Tulokset osoittavat terveysvaikutteisten elintarvikkeiden haltuunoton olevan monitahoinen ilmiö. Käsitteelliseen haltuunottoon liittyvät kuluttajien tulkinnat terveysvaikutteisten elintarvikkeiden suhteesta terveelliseen syömiseen ja luonnollisen ruoan ideaaliin sekä heidän luottamuksensa tuotteisiin, niiden valmistajiin, tutkimukseen ja valvontaan. Neljän

erilaisen terveysvaikutteisena markkinoidun elintarvikkeen käytön analyysi osoitti, että käyttäjien ja ei-käyttäjien välillä on eroja, jotka kytkeytyvät sekä sosiodemografisiin tekijöihin että kuluttajien ruokaan ja terveyteen liittyviin näkemyksiin ja käytäntöihin. Kuluttajien tavat ottaa haltuun terveysvaikutteisia elintarvikkeita muotoutuvat ruokaa, terveyttä ja syömisen kokonaisuutta koskevien käsitysten, ideoiden ja arjen käytäntöjen verkostossa.

Tulokset osoittavat myös, että käsitteellinen ja käytännöllinen haltuunotto eivät välttämättä ole samanaikaisia tai yhteneviä prosesseja. Kuluttajat tulkitsevat terveellistä syömistä ja terveysvaikutteisia elintarvikkeita monista erilaisista näkökulmista ja tuotteiden käyttöä perustellaan monin tavoin. Haltuunottoon sisältyy monia keskenään ristiriitaisia ulottuvuuksia, hyviä kokemuksia ja epäilyjä, hyväksyntää ja kyseenalaistamista, vaatimuksia ja itsestäänselvyyksiä. Tällaiset ristiriidat ovat osa arkista kokemusmaailmaa, joka nousee esiin tutkittaessa haltuunottoa erilaisin lähestymistavoin, aineistoin ja menetelmin.

List of original publications

The thesis is based on the following four publications. In the text they are referred to by Roman numerals I–IV.

I Niva, Mari & Mäkelä, Johanna (2005). Tieteellistettyä syömistä ja tuotteistettua terveellisyyttä. [In Finnish.] Yhteiskuntapolitiikka 70 (4): 440–450. [i]
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II Niva, Mari (2006). Can we predict who adopts health-promoting foods? Users of functional foods in Finland. Scandinavian Journal of Food and Nutrition 50 (1): 13–24.

III Niva, Mari & Mäkelä, Johanna (2007). Finns and functional foods. Socio-demographics, health efforts, notions of technology and the acceptability of health-promoting foods. International Journal of Consumer Studies 31: 34–45. [ii]

IV Niva, Mari (2007). 'All foods affect health'. Understandings of functional foods and healthy eating among health-oriented Finns. Appetite 48 (3): 384–393.

i Mari Niva was responsible for drafting and writing the article (in Finnish). Johanna Mäkelä gave comments and suggestions on the manuscript. The article was translated into English by translator Susan Sinisalo after which the translation was revised by Mari Niva.

ii Mari Niva was responsible for analysing the data and writing the article. Johanna Mäkelä provided comments and suggestions on the manuscript.

1 Introduction

1.1 Food and the commodification of health

Food is more than just something to eat. It acquires countless meanings and expressions in different cultures, times and places. It is part of our social identity, a means of distinction and of distinguishing between 'us' and 'others'. It simultaneously embraces traditions and innovations, the everyday and the feast, asceticism and hedonism, individuality and commensality. It fascinates us all in the different roles in our lives, whether we are its consumers, producers or researchers.

The concepts and categorisations of food reflect the social and cultural environment in which we live (e.g., Douglas & Isherwood 1979, 66; Mäkelä 2002, 18). The visibility of health in the debate on food is a characteristic feature of modern consumer society (Warde 1997; 79). It is a regular, even pervasive topic just as much in the media as in everyday discussions with members of the family, colleagues and friends. Healthy eating advice starts early in life when parents tell their children to eat their vegetables and in Finland it continues at school, where nutrition education is part of domestic science lessons. The food sections of bookshops are full of guides to diet and dieting and cookbooks for healthy eating. National and international committees and task forces draw up nutrition recommendations and try to guide the public towards choosing healthy food. In addition, food and diet occupy a focal position in the prevention and treatment of many chronic diseases. We live in a world in which it is increasingly difficult to avoid the discourse on healthy eating in the media and everyday life. As the former social norms, habits and traditions of eating have eroded, it has been asked whether it is the perspective of medicine that has begun to dominate food and eating in contemporary societies (Fischler 1980, 949).

The discourse on food and health that consumers face in their everyday life is, however, becoming more and more fragmentary and the information increasingly detailed. Foods once condemned as unhealthy are found to contain health-promoting substances, and vice versa, and research into the links between food or food substances and specific diseases gains wide publicity. The gamut of increasingly detailed research findings on food and health in the media and the abundance of diet programmes on the market do not always support the basic message of the nutrition recommenda-

tions, which has for decades been relatively constant. The optimist would say that modern consumers can choose the knowledge that best suits them and their lifestyle and use it as they see fit; the pessimist would argue that it is nowadays impossible for consumers to know what to believe. (E.g., Warde 1997, 83–84; Coveney 2000, 114–116; Nestle 2002, 67.)

The vast attention paid to healthiness and its antithesis, unhealthiness, reveals a change in our attitude to food in an age of plenty. As recently as the early decades of the 20th century, there were major shortcomings in the nutrition of the indigent Finns, and during the Second World War the question of whether the nation at large was getting enough to eat was a cause of considerable concern. Soon after the war, in the late 1950s, as shortages and rationing gave way to plenty, the problems familiar today began to emerge. People grew obese, their blood pressure and cholesterol levels rose and the number of deaths from cardiovascular diseases began to increase. In contrast, problems once common, such as goitre, rickets and night blindness gradually vanished as nutrition improved and foods were supplemented with vitamins and minerals. (Suojanen 2003.)

Over the past few decades, the Finns' eating habits have tended more towards the nutrition recommendations. We are eating more and more vegetables, fruit, vegetable oils and low-fat dairy products while consumption of such items as butter and full-fat milk has plummeted (e.g., Tike 2007, 23–24). Modern consumers are more aware than ever of health and ways of promoting it. Most Finns can quote food, exercise, smoking, alcohol and rest as factors that influence health (Aarva & Pasanen 2005, 61). The spread of information about health has not, however, meant that health now guides all our everyday practices. True, we are familiar with the guidelines, but applying them is laborious. Various eating-related problems, such as obesity and related diseases, are on the increase. Furthermore, there are social differences in their incidence. They are encountered differently by people on high and low incomes, with high and little education, with families and without. (E.g., Kokko & Räsänen 1996, S23, S26; Sarlio-Lähteenkorva 2007, 26; Prättälä & Paalanen 2007, 84–86.)

The emphasis on health is also visible in the range of foods on the market in Finland and elsewhere in advanced societies. Health and fitness have become increasingly commercialised and commodified into foods. In the early 1980s such relatively unprocessed basic foods as vegetables, fruit, wholemeal flour and (low-fat) milk traditionally known to be healthy were joined by processed products advertised as 'light' in which ingredients considered to be unhealthy or high in energy had been reduced. During the decade foods each lighter and lower in fat, salt and sugar content than the previous ones were increasingly vying for a place on the supermarket shelves. In flavour and consistency they imitated their models, but they were marketed as healthier alternatives to the customary products. (Heasman & Mellentin 2001, 60–61; Nestle 2002, 298–300.)

As the 1990s dawned, a turning point was reached in the commodification of healthiness that has even been described as a revolution in nutrition (Heasman & Mellentin 2001, 55). It was then that functional foods, as they came to be called, entered the market, promoting not only general well-being but also providing targeted effects, relief from certain complaints and help in maintaining health. Functional foods differ from conventional and light foods that are marketed at most as 'healthy', as they do from the basic nutrition education according to which a healthy diet is one that is varied, balanced and moderate and avoids the excessive consumption of fat, sugar and salt. Whereas the established nutrition education emphasises the overall diet, pointing out that single choices neither make nor break a diet, functional foods carry the message that a single product can influence health now and in the future. Functional foods have in fact been marketed as a new, 'positive' way of promoting health (Sloan 1999, 55). According to this way of thinking, health is attained not by denying oneself and avoiding certain treats but by choosing the new, health-promoting food products. In everyday life, the 'nutritional revolution' would mean the reconciliation of various views on healthiness and the adoption of new, targeted food products.

In this dissertation I analyse the ways in which consumers appropriate the new kind of healthiness commodified into functional foods. On the one hand, I examine consumers' interpretations and opinions on functional foods, and on the other, I look at how functional foods have entered everyday life by examining the role of sociodemographic and food- and health-related background factors in the use of functional foods. I claim that the appropriation of functional foods is a complex process with, on the one hand, a conceptual dimension related to trust and the meanings of products, and on the other a practical dimension related to experience and everyday practices. The various modes of appropriation are not necessarily unidirectional or simultaneous, because consumers may personally adopt products yet still wonder whether these products merit their trust. Appropriation is an ongoing process in which consumers' relation to healthiness and functional foods is moulded with time and even after the products have already become part of everyday life or have been rejected. Functional foods challenge the established concepts of healthiness and ways of promoting it but at the same time modify them.

This article provides a summary of the findings presented in the four original articles that are part of my doctoral dissertation and ties them together using the concept of appropriation. In the rest of Chapter one I present the background of the study by examining the concept of functional foods and the expectations and contradictions surrounding the new products, discuss the earlier consumer research on them, and present appropriation as a novel perspective on the way consumers receive and adopt functional foods. In Chapter two I describe the objectives of my research, its

data and the four original articles of the dissertation. Chapter three first examines the theoretical basis of the concept of appropriation in consumption research and in the sociology of consumption. It then addresses the perspectives of science and technology studies on appropriation and domestication and looks at the ways in which food has been studied in consumption research using appropriation as a theoretical approach. I end the chapter by making my own interpretation of the concept of appropriation and single out two analytically divergent dimensions of appropriation: the conceptual and the practical.

Chapter four concentrates on my findings. I summarise my empirical results concerning consumers' conceptual and practical appropriation of functional foods. At the end of chapter four I reflect on my study, its data and methods and their limitations and present some thoughts about future research on functional foods. Based on the results, the fifth, concluding chapter deals with the changes in healthy eating from three angles. I examine the many different practices of eating and their significance for functional foods, analyse the role of routines and trust in appropriating functional foods, and discuss what the individualising tendencies, particularly the bioscientific visions of genetically tailored diets may mean for the practices of eating.

1.2 The promises and challenges of functional foods

According to a widespread definition, 'a food can be regarded as "functional" if it is satisfactorily demonstrated to affect beneficially one or more target functions in the body, beyond adequate nutritional effects, in a way that is relevant to either an improved state of health and well-being and/or reduction of risk of disease' (Diplock et al. 1999, 6). Functional foods must be consumed as part of the regular diet like ordinary foods. They cannot, according to this definition, be pills or capsules. According to Diplock et al. (1999, 6), a functional food can be produced in a variety of ways. It can be a natural food or product to or from which some substance has been added or removed by technological means. It can also be a food in which some substance or the bioavailability of the substance has been modified.

Though foods marketed as functional have been on the European market since the early 1990s, they are still surrounded by some fundamental controversies. The above definition of functional foods is so general that even the experts have difficulty estimating when a food can justifiably be called functional. Apart from Japan, most countries have no legislative criteria for functional foods as such, even though the term 'functional' is widely used to distinguish them from ordinary foods. The legislation does, by contrast, regulate the health claims permitted in marketing foods, both those advertised as functional and others. In Europe the regu-

lation of health claims was for a long time heterogeneous, since the European Union legislation on the labelling of foodstuffs was interpreted differently from one country to another. The Finnish Food Act was amended in 2001 to permit claims in the marketing of foods that a product reduces the risk of disease provided that the claims have been scientifically substantiated (National Food Agency 2002, 11). The Finnish legislation was for a long time relatively liberal by general European standards.

The European Union spent many years developing health-claim legislation common and binding to all Member States, and a Regulation on nutrition and health claims made on foods (No. 1924/2006) finally came into force in July 2007. The Regulation divides claims into two types: nutrition claims and health claims.[1] A list will be compiled of claims permitted throughout the European Union, and disease risk claims that are a part of health claims will have to be subjected to the Commission's approval procedure. According to the legislation, nutrition and health claims must be founded on generally accepted scientific evidence and such that the 'average consumer' can understand them. Foods about which nutrition or health claims are made must also satisfy certain criteria as to nutrient content. At the time of writing, the definition of these nutrient profiles is still in progress and the results can be expected in 2008.

The regulation on nutrition and health claims concerns all foods, but the need for more coherent regulation is also closely connected with the position of functional foods in the grey zone between medicine and food (Niva & Jauho 1999; see also Meijboom 2007). Even though it is not permitted to claim that a food will prevent, treat or cure a disease, some aspects of functional foods make them resemble medicines. They claim to contain a particular effect on health, and unlike many conventional foods, they are products of science and technology. Although a functional food could in principle also be a 'natural' food, ordinary foods are very seldom seen to be functional in the same sense as products specifically designed to promote health. The term functional food refers almost without exception to products that contain some new health-promoting ingredient, that are the result of research and development and the marketing of which rests specifically on health promotion or disease risk reduction (see, e.g., Heasman & Mellentin 2001, 5). The effects of functional foods are tested in controlled settings similar to those for medicines, requiring basic research into the foods' constituents, analysis of the combined effect of the constituents and food, and clinical tests on humans to provide proof of the claims put forward.

Functional foods are not, however, merely an indication of the progress being made in the biosciences, such as nutrition, medicine and food technology. They are equally well part of a trend in which the food industry is seeking new added-value products in order to beat the competition on international markets. For Finnish companies in particular, functional foods

have represented a chance to include healthiness in products and product development in a new way, to increase their collaboration with the research community, to expand their product ranges and to improve their profit margins and productivity. The aim of many companies has been to expand internationally by means of functional foods. This is also evident from, for example, the food and nutrition programme launched by the Finnish Innovation Fund Sitra in 2005, the ambitious aim of which is to make Finland a forerunner in healthy nutrition (Uusikylä 2006, 10). Occupying an important role in making this vision come true is the development of functional and 'smart' foods. This latter means, in this context, both healthy food and sensible eating habits. (Ibid., 7.) In Finland, research into functional foods and their product development have received considerable public funding. The technology programmes of the Finnish Funding Agency for Technology and Innovation (Tekes) have financed such research and development to the tune of tens of millions of euros from the 1990s onwards and in 2006 the Academy of Finland launched a research programme in nutrition, food and health. Finland also has two research establishments, in Turku and Kuopio, specialising in the effects of food on health. In addition, there is a professor of functional foods at the University of Helsinki.

One of the oldest and best-known foods marketed as health-promoting in Finland is the xylitol chewing gum promoting dental health that came on the market back in the mid-1970s and that has since become an everyday commodity for many Finns, especially families with children. Research and development on functional foods did not, however, begin on a wider scale until later. The dairy products containing probiotic lactic acid bacteria promoting the well-being of the stomach came on the market in the early 1990s, and the first spread containing cholesterol-reducing plant stanol arrived in the shops in 1995. When the new cholesterol-reducing margarine was launched, Finland experienced an initial burst of enthusiasm for functional foods and the demand for the spread was so great that it sold out. The stock price of the company, Raisio, making Benecol margarine shot up and the new product was expected to sweep the world (Lehenkari 2003, 512–513). Benecol products have gradually found their way onto various foreign markets but the dream of sweeping the world never came true as there is nowadays keen market competition between cholesterol-reducing products.

Over the years the product ranges have widened and a functional ingredient can now be found in the most varied of products. Competing with products promoting the well-being of the stomach and reducing cholesterol in particular are numerous manufacturers whose products incorporate constituents either patented by the company itself or produced under licence. Meanwhile the markets for functional foods have grown and targeted increasing numbers of consumers with their special health objectives. Products are available to control blood pressure, to improve re-

sistance to disease, to control weight, to keep the blood-sugar level stable or to revive and stimulate the system in general. Not all the manufacturers' market experiments have been successful. Even products launched by large companies with sizeable advertising campaigns have vanished from the shelves because sales have not lived up to expectation. The value of Finland's functional-food market at present stands at about €70–80 million, which is just under one per cent of the annual food market, but the annual growth is higher than that of the food markets on average, about 6–10 per cent (Välimäki 2007, 29).

The expectations of functional foods are still great, not only in the food industry but in society in general as well. Functional foods are expected to increase the economic profitability, growth and competitiveness of the food industry, but also to afford new research and development potential. They will, it is hoped, provide more tools for nutrition education, help consumers to understand the connections between food and health and improve consumers' chances of making health-promoting choices. They are thought to be able to promote well-being and public health and reduce the costs of health care. (See, e.g., Malaspina 1996, 4–5; Hasler 1998, 70; Lawrence & Rayner 1998, 75; Lawrence & Germov 1999, 69; Heasman & Mellentin 2001, 14–22.)

Critical voices have, on the other hand, also been raised, painting pessimistic pictures of a future in which techno-food gains ground over 'proper', healthy food and people lose their awareness of what they should eat. In this sense functional foods can be seen as part of a problem in modern society which Fischler (1980, 948) terms gastroanomy, in which the traditional norms and rules regulating eating have eroded and eating has lost its collective dimension. Functional foods have been described as technological interventions the significance of which is questionable in addressing complex social problems such as improving public health (Lawrence & Rayner 1998, 78; see also Schroeder 2007, 252). Functional foods have also been regarded as evidence of the medicalisation of food and as representing a reductionist approach to food and health. As medicalisation proceeds, health and its promotion become increasingly the responsibility of the individual, and the multiple causes of diseases receive less and less attention. (Lawrence & Germov 1999, 60.) According to Lawrence and Germov (1999, 60), 'functional food claims may distort people's food consumption patterns, privileging foods that carry health claims, decreasing variety in the public's diet, and hence distorting nutritional intake'. The nutritionists have also criticised manufacturers of functional foods for trying to transform junk food into health food by adding functional ingredients and for creating false impressions that health depends on single ingredients (Nestle 2002, 334–357). Techno-food is not necessary from the nutritional point of view and not to be hoped for from the perspective of food traditions, Nestle writes (ibid., 355).

The development and marketing of functional foods have also been criticised as being founded more on scientific (the science-push model) arguments than on consumers' expectations of healthy eating (the consumer-pull model). The former assumes that consumers understand science and technology, whereas in the latter science is expected to be able to interpret consumers' needs. (Wennström 2000, 30.) The critics have also debated what functional foods, on the interface between food and health, mean for consumers' trust in food and medicines. Meijboom (2007, 240) argues that the new products combining food and medicine destroy the routines and expectations surrounding ordinary, familiar products. Faced with the necessity to apply to food ways of thinking associated with medicines, people can no longer be sure what to expect of products and their manufacturers.

1.3 Consumer research on functional foods

As functional foods entered the market, consumer, food and health researchers became interested in the new products from the mid-1990s onwards. In the following, I sum up previous consumer research on functional foods and focus primarily on European studies in which a functional food is understood as a food with health-promoting ingredients created by means of product development. Consumer research in North America, and especially the United States, often defines functional foods in broader terms. There functional foods may also denote supplements or so-called nutraceuticals or even foods that are naturally health-promoting.

The interests of consumer researchers have often been weighted towards the research and development perspective viewing consumers as the recipients of products at the end of the product chain. The aim has been firstly to determine by means of quantitative, but in some cases also qualitative research, consumer's willingness to buy functional foods endowed with certain health-enhancing properties (e.g., van Kleef et al. 2002; West et al. 2002; Bech-Larsen & Grunert 2003; Urala & Lähteenmäki 2003; Bäckström et al. 2004; Ollila et al. 2004; Urala & Lähteenmäki 2004; West & Larue 2004; Huotilainen & Tuorila 2005; Verbeke 2005; Huotilainen et al. 2006a; Huotilainen et al. 2006b; Verbeke 2006; Ares & Gámbaro 2007; Urala & Lähteenmäki 2007). Secondly, consumers' perceptions of health claims have been analysed (Niva et al. 2000; Wennström 2000; Bhaskaran & Hardley 2002; Svederberg 2002; Kozup et al. 2003; Urala et al. 2003; Wansink 2003). The third major objective in consumer studies has been to develop product concepts and information strategies that will help consumers to gain a better understanding of health claims and the benefits of functional foods (e.g., Schmidt et al. 1997; van Kleef et al. 2002; Bech-Larsen & Grunert 2003; Frewer et al. 2003).

The above perspectives can be criticised as being somewhat narrow: consumers have been asked to take a stand on products, product concepts or health claims while usually no allowance has been made for the context in which they buy and eat their food. It is of course possible, by examining consumers' liking for hypothetical products or new health claims, to determine the kinds of claims that are understandable and the types of products with which they might be associated. It is, however, often impossible to judge from such studies the broader categorisations of food and health to which people's ideas of functional foods relate or the role assumed by products in people's everyday lives.

These challenges have been addressed in the studies seeking to understand consumers' own approaches and to some extent also to place functional foods in broader cultural and social frames. Bäckström et al. (2003, 305), for example, in their study of new social representations of foods, suggest that people approach new foods previously unfamiliar to them, such as genetically modified, organic, ethnic or functional foods, by means of dichotomic thinking. According to them, examples of the dichotomies surrounding new foods are trust/distrust, safe/unsafe, natural/artificial, pleasure/necessity and past/present. Many studies have observed that whether products or their production methods are regarded as natural or artificial is significant in perceptions of functional foods (e.g., Schmidt et al. 1997; 44; Jonas & Beckmann 1998, 19; Poulsen 1999, 7, 21, 37; McConnon et al. 2004, 17; West & Larue 2004; 78). Huotilainen and Tuorila (2005, 569) regard consumers' perceptions of the relationship between natural and technological as central to their trust in new foods. Urala and Lähteenmäki (2007, 10) have likewise stressed the importance to consumers of the safety of functional foods and trust in them, as indeed the need and reward for using them (see also Verbeke 2005, 54). These studies have also raised consumers' critical perspectives, doubts and concerns about functional foods. It has further been observed that consumers' perceptions of functional foods vary from country to country (Jonas & Beckmann 1998, 28) and that Finns seem to be relatively optimistic about the new health-promoting foods (Bech-Larsen & Grunert 2003, 12–13).

So far functional foods have aroused less interest among sociologically-oriented consumption researchers than among social psychologists, marketing researchers and those focusing on research and development potential. Functional foods have been noted as part of the change taking place in consumption and food cultures (e.g., Mäkelä 2002), but they have only seldom been the object of closer observation. Exceptions in this sense are the article by Holm (2003) on functional foods from the perspective of everyday eating, the empirical analysis by Haukenes (2003) of functional foods as part of late modern food culture, and the critique by Östberg (2003) of functional foods as a 'health simulacrum' imitating healthiness.

Holm (2003, 540–541) sees functional foods as a sign of increasingly individualising eating and concludes that biomedically-designed diets may, in time, transform the social meanings of meals. Korzen-Bohr and O'Doherty Jensen (2006, 162) also refer to the sociality of eating; they observed that for the older women participating in the study, functional foods conflicted with the social aspects of food. The women who stressed the social aspects of eating were not keen to replace medicines with functional foods when faced with serious health problems. Haukenes (2003) notes that Norwegian consumers in her study were indeed for the most part favourably disposed towards the idea of functional foods but still regarded them as artificial compared with ordinary food. Functional foods can be regarded on the one hand as a means by which people assume personal responsibility for the healthiness of what they eat, but on the other hand as guidance from above which makes them lose control over their food. Haukenes also points out that one reason for the critical attitudes to functional foods may be that the products do not fit naturally into consumers' own habits and routines. (Ibid., 175–180.)

Östberg (2003, 131–133), drawing on Baudrillard's conceptualisations of postmodernism, discusses the relative healthiness of functional foods. According to him, functional foods aim at a state of health that can only be attained in an imaginary, ideal and fully-controlled world. He criticises the fact that the products assume the existence of a rational consumer whose health problems are solved by information and new products. They obscure the view that healthiness is ultimately achieved only in the relationship between a product and its user. Belasco (2006, 251–257), writing about future food scenarios, in turn sees functional foods as part of a vision of a 'recombinant future' in which scientific eating and old traditions meet and exist side-by-side and in which eating habits are more difficult than ever to predict.

Functional foods have also caught the attention of health researchers. In the late 1990s health sociologists were already critically assessing the medicalising effect of functional foods and their potential significance in the promotion of public health (Lawrence & Rayner 1998; Lawrence & Germov 1999; see 1.2 above). Public-health researchers have in turn examined how socioeconomic and lifestyle-related factors are linked with the use of functional foods. Anttolainen et al. (2001, 1367) looked at the unadjusted effects of various background factors and found that the most probable users of cholesterol-lowering margarines in Finland were men, the elderly, the highly educated, those with high income, those who were married, living in urban areas, in high occupational positions and employed or retired. de Jong et al. (2003) studied the use of functional foods and supplements in the Netherlands. In their adjusted statistical models, different factors explained the use of different products and in many cases the associations between background factors and use was weak (ibid., 278–279). Accord-

ing to de Jong et al. (2004, 853), among Finns with a diagnosed high blood cholesterol level the most probable users of cholesterol-lowering spreads were women, the elderly, the highly educated, those who were married, non-smokers and healthy eaters. The findings of these studies on the significance of different background factors have varied, because the analysis methods, the target and background variables and the case products the use of which has been studied have differed.

The studies referred to above have provided information on consumers' perceptions and attitudes and their willingness to buy functional foods. They have described factors explaining the use of certain functional foods and opened up critical perspectives on the commodification and commercialisation of the healthiness of food. Less research has, by contrast, been made on consumers' ways of interpreting and understanding functional foods, their conceptualisations of the relationship between healthiness and functional foods or on why they either do or do not adopt functional foods as part of their everyday lives.

These questions are linked to two themes raised in recent years in social-scientific consumption research. First, they tie in with the idea that the meanings of consumption mostly have their origins in ordinary, inconspicuous consumption, and that it is the recurring contents and routines of consumption that are significant in everyday life (Gronow & Warde 2001b, 219; Warde 2002, 19–20; Warde 2005, 140; Sassatelli 2007, 108–109). The recent emphasis in consumption research on the unnoticeable, repetitive and routine nature of everyday consumption practices such as eating contrasts with the earlier perspectives focusing more on the conspicuous and particular aspects of consumption. It also departs from the theories that approach consumption as a postmodern source of pleasure and dreaming, as the production and use of symbols and meanings, or as an expression of lifestyle and individuality. (See especially Warde 2002.) Sassatelli (2007, 108–109) refers to the mundane and taken-for-granted element of consumption by speaking of 'entrenched consumption routines'. The reflexivity, routines and things taken for granted in everyday consumption become mixed as the 'bounded reflexivity' of contemporary consumers. The routines and reflexivity relating to food and eating play a central role in the practices of consumption.

Secondly, the above questions are linked with the view that became increasingly dominant in research on consumption and technology from the late 1980s onwards, that human-object relations to a great extent determine how we live in the world and how we construe our everyday lives in time and place. The focal idea is that material objects are an essential part of social relations, and that in appropriating and adopting objects we at the same time build our social identity. Appropriation is a conceptual tool for seeking to understand the adoption and the process of making objects 'our own' – be they called things, artefacts, commodities, products or goods (e.g.,

Miller 1987; Mackay & Gillespie 1992; Silverstone et al. 1992; Carrier 1995; Lie & Sørensen 1996; Dant 1999). The concept of appropriation is an attempt to break away from the view of consumers as passive objects and to understand them as active agents who, by their own action and object relations not only make their own everyday lives understandable but also influence the shaping of the relations between the commodity world and society. From the perspective of appropriation, people and the artefacts they create are inevitably in dynamic relation to one another. Interestingly, the theories of human-object relations have stressed the importance of food and eating in consumption practices (see Chapter 3.3), but in consumer research on food, the perspective of object appropriation and adoption has not been applied earlier.

2 The aims, data and methods of the dissertation

In this summary article of my thesis, I apply the concept of appropriation to analyse the ways in which consumers adopt functional foods by dividing the concept into two analytically separate components: conceptual and practical. My objective is, firstly, to analyse the interpretations and opinions on functional foods that consumers use to open up the meanings of products and to make them understandable. At conceptual level people link the discussion on functional foods with their own experiences and think of the products using their existing categorisations and ways of thinking. My second objective is to analyse the use of functional foods by looking at consumers who have appropriated functional foods in practice, in everyday eating. The analysis of this practical level of appropriation focuses on the role of sociodemographic and food- and health-related background factors in the use of functional foods.

The original articles I, II, III and IV contribute to achieving these objectives in the following ways: Article I (Niva & Mäkelä 2005) is a review of a phenomenon I refer to as the scientification of eating and the commodification of healthiness into functional foods. It discusses the prerequisites for the appropriation and domestication of functional foods and in particular trust as a precondition for appropriation. Article II (Niva 2006) looks to see how common the use of ten different kinds of foods marketed as functional is and analyses the ways in which consumers' backgrounds are connected with the use of four particular products. By looking at unadjusted and adjusted effects in logistic regression analysis models I could examine to what extent sociodemographic and health-related background factors predicted the use of four types of functional foods. Article III (Niva & Mäkelä 2007) addresses the dimensions of the acceptability of functional foods using principal components analysis. In addition, through analysis of variance, it examines whether the conceptual appropriation is linked with consumers' sociodemographic and food- and health-related backgrounds. Article IV (Niva 2007) looks at consumers' interpretations of healthy eating and functional foods and the similarities and differences between them by qualitative analysis. In this article I searched for the interpretative perspectives applied by consumers in the focus group discussions when talking about food, healthy eating and functional foods. By analysing the different approaches employed by the participants in the discussions I could discern various ways of thinking about functional foods in the context of healthy eating.

My work is founded on two sets of empirical data, both of which have previously served as the basis for reports and articles I have written with colleagues (Niva et al. 2003; Niva & Piiroinen 2005; Niva et al. 2005). The first set is a survey carried out in 2002 as a computer-assisted telephone interview (CATI) the purpose of which was to examine the acceptability and use of functional foods among consumers and consumers' ideas of what kinds of foods can be regarded as health-promoting (see Niva et al. 2003). The survey was carried out at the National Consumer Research Centre and was funded by the Ministry of Agriculture and Forestry. The data were collected by the marketing research institute Taloustutkimus Oy. The sample included responses from 1210 Finns representative of the population with regard to gender, age (15+) and geographical distribution (apart from the Åland Islands). The interviews covered four thematic areas, 1) views on healthy eating, 2) the frequency of use of ten foods marketed as functional foods, the reasons for use and non-use and use experience of the products, 3) the acceptability of functional foods and 4) background questions relating to sociodemographic factors, food habits and efforts to maintain health. The questionnaire used in the interview is presented in Appendix 1.

For articles II and III the quantitative data were analysed anew by different methods. In the study of the acceptability of functional foods (article III) I analysed consumers' responses to statements about functional foods in order to study the acceptability of the products in Finland. Principal components analysis (PCA) was used to discern dimensions of acceptability. The factor scores of the PCA were then used in the analysis of variance in order to study whether sociodemographic variables (gender, age, education and having children) and different kinds of food- and health-related ideas and practices (efforts to lower blood pressure or cholesterol, use of vitamins or natural health products, taking exercise, the importance of healthy eating and the acceptability of technology in food production) are associated with differences in acceptability. (See article III, 37 for details of the methods.)

In the study of the use of functional foods (article II) I was interested in the ways in which sociodemographic factors (gender, age, education and occupational status) and health-related ideas and practices (the importance of healthy eating, exercise, efforts to lower cholesterol levels and the use of other functional foods) were associated with the use of functional foods. I looked at the use frequencies of ten products marketed as functional foods and made a closer examination of the four most popular ones. I analysed the crude effects of each explanatory variable and constructed three logistic regression analysis models in which the explanatory variables were added in blocks. The explanatory variables used in this study were partly different from the above because acceptability and use were hypothesised as being related to somewhat different background variables. In addition, the analysis reported in article III was conducted before that in article II. Most of the variables used in article III were examined in article II, but not

all of them proved statistically significant. (See article II, 15–16 for details of the methods.)

The second set of data consists of eight focus group discussions held in autumn 2004 at which 45 middle-aged or older (over 40 years old) users and non-users of cholesterol-lowering foods discussed healthy and unhealthy eating and the role of functional foods in healthy eating. The data were collected at the National Consumer Research Centre as part of a project examining consumer perceptions of food risks coordinated by the VTT Technical Research Centre of Finland and funded by the Ministry of Agriculture and Forestry (see Niva & Piiroinen 2005). The discussions focused on the discussants' eating patterns; ideas about healthy eating and healthy foods and about the links between food and health; functional foods and experiences of their use; and reflections about future developments. The discussions lasted between one-and-a-half and two hours, and they were tape-recorded and transcribed. The transcribed data were coded thematically with the Atlas/ti computer program with codes that were predefined, that emerged from the data or that were related to the theoretical concepts. I repeatedly read through the transcribed discussions and the coded data and analysed them by seeking out the interpretative perspectives used by the discussants when talking about functional foods and healthy eating. These results are reported in article IV. The discussion guide of the focus groups is presented in Appendix 2.

The strengths and limitations of this study, the data and methods are reflected on in Chapter 4.3. In the following I refer to the original articles with their respective Roman numerals I, II, III and IV. Occasionally I also refer to other publications that have reported findings based on the two data sets described above. The report Niva et al. (2003) and the article Niva et al. (2005) are based on the quantitative data also analysed in the original articles I, II, and III; article Niva & Piiroinen (2005) is based on an analysis of the qualitative data used in article IV.

3 Appropriation as a theoretical perspective on consumption

In this chapter, I first examine appropriation as a theoretical perspective in the study of the relations between people and the material world and describe the development of the concept in consumption research. I then briefly examine the use of the concepts of appropriation and domestication in social studies of technology. Thereafter I discuss appropriation as a novel perspective in food research and justify my use of it as a way of addressing the adoption of functional foods. Finally, I make a distinction between two aspects of appropriation, the conceptual and practical ways of making a product one's own.

3.1 Object relations in consumption research

Research on material culture is a relatively new perspective in consumption research, despite the fact that the foundations for it were laid more than a century ago when sociologists Simmel and Veblen analysed the change in modernising, urbanising society by examining fashion and money as manifestations of a new type of consumer culture. Yet not until the 1980s did social scientists become interested in consumer culture (see, e.g., Miller 1987; McCracken 1988). Research focusing on people's active relationship with consumption and striving to understand not exceptional or conspicuous but ordinary consumption (e.g., Gronow & Warde 2001a; Warde 2002; Ilmonen 2007; Sassatelli 2007) has, however, quickly gained ground. This is evident both in the sociological theory of consumption and in the research influenced by this as in the analyses of the domestication of everyday technologies in particular.

Studies of the adoption and appropriation of material objects have in most cases begun with the observation that in the course of modernisation – industrialisation, urbanisation and rationalisation – we, as consumers, have become distanced from production; hence the products for sale are inevitably in a certain way alien to us. In acquiring and particularly in using commodities they nevertheless become familiar and special to us, part of our identity. The purchase of a product is the start of a long process in which the consumer 'works upon the object', assigns it a new context and makes it his or her own. Consumption can in fact be regarded as work in which the alien is made familiar and special (Miller 1987, 190), or it can be

thought of as socially organised practices of the appropriation of objects (Sassatelli 2007, 102).

Many of the theorists important to consumption research analysing human-object relations, such as Mary Douglas, Igor Kopytoff, Arjun Appadurai, Daniel Miller and Pierre Bourdieu, have a background in anthropology. Through their work concepts relevant in anthropology have come to play a substantial role in consumption research. In addition, they have been influential in establishing the focus on the relations between humans and objects as a central part of consumption research.

In the late 1970s, when Douglas and Isherwood wrote about consumer society and the place of goods in it, their work was to a great extent criticism of and a reaction to the hegemony of economics in consumption research (Douglas & Isherwood 1979). They criticised economics for its narrow assumption of economic rationality and its view that consumption can be reduced to markets and purchasing decisions. Instead of rationality they preferred to speak of 'metaphorical understanding', which people use to classify, compare and organise the world around them. Consumption is not just the attainment of physical or mental well-being or status but an essential part of the social system in which people operate in their everyday lives. From this perspective, material goods occupy an integral, mediating role in human relations and social life. (Ibid., 4–5.) Douglas & Isherwood (ibid., 12) claim that 'Goods are neutral, their uses are social; they can be used as fences or bridges'. Hence consumption is not about individual preferences formed independently of others but about goods as a means of making the world understandable and of communicating with others. Douglas and Isherwood deliberately set aside the practical dimensions of goods – their usefulness and use – and concentrate on consumption and consumption objects as a way to make sense of the world. To paraphrase Lévi-Strauss, commodities must be good for thinking; they are a non-verbal medium for creativity. (Ibid., 62.) For Douglas and Isherwood consumption is an active process that creates and continuously redefines social classifications. (Ibid., 68–72.)

The culturally differentiated meanings attached to objects and the constant categorisation and re-categorisation of objects have also been stressed by Kopytoff (1986), focusing on the tension between commoditisation[2] and singularisation: these are opposite processes, the former governed by the laws of economics and the latter by cultural logic. In commoditisation objects are offered for exchange. They have both a use value and an exchange value, because a commodity can always be exchanged for another or bought. Singularisation suggests that people make goods special, singular and non-exchangeable; they categorise and use them in their own way and even 'assimilate' with them. The individual singularises what the economy commoditises. People are obliged to operate within the structures of commoditisation at the same time as they seek to create order in the universe of objects by using their own means of singularisation. (Ibid., 68–73,

76, 80.) Although Kopytoff does not speak directly of the appropriation of objects and instead concentrates on the problematic relationship between singularisation and commoditisation, his discussion on the transformation of commodities into non-commodities is closely akin to what Miller (1987) calls appropriation (see below).

The analysis of objects can also apply a socio-historical perspective. This approach is represented particularly by Appadurai (1986), who discusses the changes in the supply and demand of commodities and the dynamics of these changes. Appadurai analyses commoditisation as a temporal, cultural and social phenomenon and emphasises the active and social nature of consumption. He also stresses the relationship between commodities and knowledge: on the one hand commodities carry the aesthetic, technical and social knowledge originating from their manufacturer, and on the other they require the user to know how to use them. As the distance between consumers and manufacturers grows, production knowledge and consumption knowledge move further and further apart. As commodities travel longer and longer distances – be they spatial, temporal or institutional – the two types of knowledge do not necessarily meet. Both become fragmentary, partial and contradictory. (Ibid., 41–43.)

Miller, who in his book 'Material culture and mass consumption' (1987) examines the philosophical and social background to human-object relations, can be regarded as a pioneer of research on consumption and material culture. Modern culture is, as he sees it, above all material culture and its analysis must focus on the relations between humans and objects (ibid., 3). Research that concentrates on only one of these is unavoidably one-sided, because the processes of culture cannot be reduced merely to objects or subjects (see also Miller 2005, 41). Miller was inspired by Hegel's concept of objectification[3] and Marx's later interpretation of this. Whereas objectification was for Marx a negative, passivating and alienating process, Miller stresses the original Hegelian interpretation in which objectification is a positive, creative and active process: the individual makes the surrounding world familiar by means of externalisation and sublation and creates his or her own relationship to it. Miller modifies Hegel's philosophical objectification connected with the individual's development into a concept describing human-object relations. In this particular Millerian form of objectification the object refers to an artefact that is a product of culture. The relationship between object and subject is inherently dynamic and processual. (Miller 1987, 28.) Miller discusses objectification in modern consumption culture, but also the everyday appropriation of objects. For him, appropriation denotes a consumption process in which the objects are taken out of the abstract and alien realm and made into familiar, inalienable cultural material (ibid., 17). In his later work Miller defines appropriation as making the object one's own and working on it, as attaching one's own experiences to the object and identifying with it (Miller 1997, 14, 26). People do not simply buy

goods: they use them in their own ways and for their own purposes, shape them and through them their world.

From this perspective artefacts also carry a certain 'bridging' meaning (Miller 1987, 107). They are physical and thus bound to practical activity, but also symbols, tools for drawing distinctions and similarities, expressions of emotions and worldviews. At the same time they are bound to specific contexts. It is artificial to try to understand objects in themselves, because objects that are physically similar are used in the most varied of ways. Miller (2005, 5) has also stressed that objects are important precisely because we often do not 'see' them. The less we are aware of them, the more strongly they can determine our expectations by 'setting the scene' without placing themselves open to challenge. They are not questioned because we do not recognise their ability to influence events.

One of Miller's merits is that he simultaneously stresses both individual appropriation processes and the structural conditions for appropriation. Consumption as work is closely tied to the cultural environment in which the objects acquire their social meanings and which offers the tools for individual appropriation. These tools are, on the one hand, various moral evaluations, ideals and principles for assessing objects. On the other hand, people's ability to contextualise objects depends on the conditions in which they live, because different conditions provide different tools and resources for appropriation. The ability to appropriate cannot be taken for granted. (Miller 1987, 91.) Thus Miller distances himself from both the subjective and the objective perspectives by seeking to understand human-object relations under the prevailing structural conditions.

All the researchers mentioned above have stressed the active, dynamic and cultural relationship between humans and objects in which the world is appropriated by producing and using goods as part of social life. The perspectives put forward thus differ from, for example, Bourdieu's theories of the relationship between practices and habitus, structures and objects. (Bourdieu 1977 and 1984). In his theory of practices Bourdieu stresses that practices are products of objective structures, but at the same time they constantly strive to renew these structures. The principle behind the structuring of practices and representations is the habitus – the universalising mediation producing the practices of the individual agent (Bourdieu 1977, 79). By habitus Bourdieu means both the principles by which people categorise the world and the system of these categorisations. The habitus is a disposition, a way of seeing the world, of producing practices and giving meanings. (Bourdieu 1984, 170.) The practices are collectively organised, but at the same time flexible. They produce strategies for actors to cope with new and changing situations in the various fields of the social world. For Bourdieu, a particular practice is closely tied to a given habitus: its meanings are shared, because the habitus sharing the practice is internally homogeneous. (Bourdieu 1977, 72–80.) Different family backgrounds, inher-

ited and acquired economic and cultural capital produce different habitus and hence different categorisations and practices. Habitus is therefore significant in human-object relations, but at the same time the objects themselves act as means of distinction. However, Bourdieu treats human-object relations mostly as a given element in habitus and practices rather than something to be studied in their own right.

Subsequent developments of the theories of appropriation in the 1990s and 2000s and especially the empirical studies employing the concept have continued the work of the theorists quoted, but they have not, so far as I can see, added anything radically new to the field. Lupton and Noble (2002, 7), for example, have noted the varied use and interpretations of the concept of appropriation in the literature. Most studies nevertheless work on the idea that appropriation begins when an object has been purchased, when it leaves the commodity system and becomes the consumer's or household's own. The concept of appropriation assumes that when people acquire and use objects, they inevitably modify them by trying to incorporate them in their everyday routines. The process in which people make goods their own and make them suitable for themselves has been called the 'work of appropriation' (Carrier 1995, 112; cf. Miller 1987, see above), or appropriation has been defined as the 'embedding' and 'disembedding' of culture (Dant 1999, 14). It has likewise further been stressed that objects shape our relations with other people and empower us, and they cannot therefore be regarded merely as material, inanimate instruments (e.g., Lury 1996, 1–8; Ilmonen 2007, 289). Appadurai's reflections on knowledge of products have been taken up particularly by Preda, who sees people and objects as producers and carriers of knowledge. Objects contain and materialise knowledge, but they also contribute to its production and require it of its users. (Preda 1999, 356.) Ilmonen (2007, 291) in turn stresses that our knowledge of goods is inevitably deficient. By using goods we learn more about how they work, but the knowledge is always to some extent personal and undefined; to use Polanyi's (1966) term, tacit. Appropriation is a multiphased process that continues even when the object is in accustomed and even routine use (Ilmonen 2007, 15).

One of the most interesting recent analyses of the practices of consumption and object relations is the work by Sassatelli (2007) on consumer culture. Sassatelli analyses the appropriation of objects using Goffman's concept 'keying'. Applied to objects, keying denotes a kind of 'reframing' and 'transcription' adding new layers to their meanings. People de-commodify objects in rituals and practices. They transform and modify them in temporally and locally determined contexts, code them into their own experiences, connect them with specific situations and thus make them their own. (Ibid., 142.)

It has also been emphasised that people are creative appropriators: they appropriate nature, for example, via transformation. The raw materials provided by nature are cooked into meals (cf. Lévi-Strauss 1966, 937), or nature

is integrated with everyday practices by, say, gardening. (Chevalier 1998.) Dant (1999, 2) describes human-object relations as quasi-social. In them people 'live out' in a material form their own abstract relation to society and the rest of the world. Dant also points out that people have more to do with objects and the material world than with each other in everyday life. Lately he has also raised the issue of our physical relation to the material world. In acting with objects, people have to allow for the intentions built into these objects – the possible and impossible ways of using them. (Dant 2005, 135.) Knorr Cetina (1997, 1, 20) may be regarded as something of a kindred spirit to Dant and Miller in speaking of object-centred sociality and stressing that material culture has always occupied an important place in shaping people's identity. According to her, as the traditional forms of sociality disintegrate, objects provide an environment to which people feel they belong. Individualisation could then mean that people no longer look to human relations in seeking a sense of belonging.

Carrier (1995, 7–8) has noted that most of the objects we encounter are mundane and inconspicuous, and we therefore appropriate them through familiarity. In order to be used, goods – however simple – must first be appropriated. Familiarity can also be analysed by considering the features characteristic of 'the new'. Campbell (1992, 52–55) divides 'the new' into three categories. Firstly, it may be new in the sense that it is fresh or just made, such as fresh bread. In this case it does not need to possess any new properties; the new repeats the old, but the product is not yet old or stale. Secondly, the new may signify an inventive, better or more efficient version of an existing product. It incorporates the latest scientific and technological achievements, and contemporary consumers even take such newness for granted. We are accustomed to seeing a steady stream of newer, better versions entering the market, especially of such technical goods as televisions, computers or mobile phones. Yet consumers do not necessarily consider the new better than the old; they may be completely satisfied with the existing technology. Thirdly, the new may be unfamiliar and alien, a product of which the consumer has no previous experience. Experientially, such products are totally new. A product that lacks an element of familiarity is difficult to appropriate (see also Carrier 1995, 112).

It is interesting to note that some of the above analyses address objects as part of human relations, while others focus primarily on social life, the context of which is the material environment. The factor common to the two perspectives is their emphasis on the relation between the two. The manner in which such concepts as consumption and culture are brought into the debate likewise varies. For Douglas and Isherwood (1979), for example, objects are the visible layer of culture, while consumption, i.e. the possession and use of objects, is thought of as an arena in which culture is built and shaped. Dant (1999, 11) defines culture as the field of dynamic and changing practices surrounding material objects, whereas Kopytoff (1986)

contrasts culture and economy in discussing the dynamics of commodification and singularisation. However, the concepts of consumption, appropriation, social and cultural are present in various ways in all the above studies of material culture.

3.2 Processes of appropriating technologies

Though consumption researchers began analysing human-object relations in the 1980s, materiality has entered sociological debate mainly through social studies of science and technology (Lehtonen 2006, 308). The appropriation of new technology in everyday life has been the topic of many social studies from the 1990s onwards. However, the perspective of appropriation, domestication or user experiences is also a relatively new approach in social studies of technology, more recent than, for example, social constructionism or the study of the social shaping of technology. The latter two address technologies as socially constructed, as being shaped by negotiations between different actors and as social phenomena that only gradually become established. Mackay and Gillespie (1992, 690–691), for example, and Lie and Sørensen (1996, 2) criticise the early sociology of technology for not sufficiently allowing for the role of consumers and users in the shaping of technology.

Why, then, have appropriation and domestication now become the focus of attention in social studies of technology as well? One explanation may lie in what has been described as the 20th century's 'schizophrenic' attitude to technology (Hård & Jamison 1998, 1). The technological optimism prevailing in the first half of the century has gradually given way to a disillusionment accompanied by a questioning and scepticism of technological development not only in social critique but in everyday life as well. Technology and its products are no longer automatically associated with progress and development; rather, the contradictions and dichotomies relating to them are acknowledged. With the emergence of these tensions, the time has come to analyse the ways in which ordinary people appropriate the contradictions in technology and assimilate it in their own everyday lives. (Ibid., 1–3; see also Jamison & Hård 2003.) Another explanation may lie in the point made by many consumption researchers (e.g., Miller 1987; McCracken 1988, 77–89; Miller 1995; Lury 1996, 51; Lupton & Noble 2002, 6) that in seeking to deconstruct the juxtaposition of production vs. consumption it would be fruitful to discuss not only how meanings are constructed and written into goods and their use but also how users produce meanings and use goods in their everyday lives. One approach in this 'more mature' research into consumption is precisely the perspective of appropriation (Lupton & Noble 2002, 6).

The terms used in social studies of technology for the adoption of objects are more varied than in other consumption research. The term 'appro-

priation' is one often used, though endowed with a variety of meanings. One feature shared in these approaches is that consumption is seen as an active, creative process (e.g., Mackay & Gillespie 1992; Strathern 1992; Silverstone & Haddon 1996; Lupton & Noble 2002; Geels 2005). Correspondingly, appropriation is active, continuous and culturally shaped. It assumes different forms and produces different socio-technical orderings (Hand & Shove 2007, 82, 97). In social studies of technology it is stressed that for consumers and users, new services and technologies are unfamiliar and therefore exciting, but possibly also threatening and perplexing. Their users must therefore bring them within the domain of the familiar and adapt them to their own culture and routines. Gradually the technologies become familiar and they may replace former customs or take their place alongside them. (Silverstone & Haddon 1996, 60.) At the same time the technologies change; people shape them, redefine their objectives and even reject them. The meanings attached to technologies are negotiable, and the negotiation over them takes place both privately and in public arenas.

Appropriation is often seen as a phase in the domestication of technology, as in the well-known article by Silverstone et al. (1992) dealing with domestication as part of the household's moral economy, i.e., the organisation of families around economic, social, ethical and other objectives and values. For them (ibid., 24–26), domestication also involves 'objectification', 'incorporation' and 'conversion'. To put it briefly, these refer to the meanings and use of objects as well as to objects as an expression of identity (cf. Silverstone & Haddon 1996). In many social studies of technology, the relationship between appropriation, domestication, incorporation and adoption is not clearly defined, or the concepts are used differently. Despite the somewhat unestablished use of terms, domestication seems to be the key concept adopted in analysing how technology becomes part of everyday life.

The studies of the domestication of technology are based on the idea that we consume technology or technical artefacts by using, adapting and integrating them in our everyday lives. At the same time the artefacts 'consume' us when they receive our attention, when we react to them or when we are fascinated by their functions, potential or design (Lie & Sørensen 1996, 8). This dual human-technology relationship is a consequence of the process of domestication. The technologies have to be tamed to suit our routines, and they have to be made familiar to become part of our lives (Geels 2005, 47). On one hand, domestication has been described as a two-way, dynamic process: technologies are shaped, but they also shape households' practices. (Silverstone et al. 1992, 26; Aune 1996, 93.) On the other hand, domestication has been regarded as a conservative process in which consumers incorporate new technologies in their own everyday activities and customary habits so that the structures of their own lives and their control of them are preserved (Silverstone & Haddon 1996, 60). Silverstone

(1994, 174) describes domestication as the process both of taming the wild and cultivating the tame.

The appropriation of technology is not necessarily a linear process in which the technology gradually enters everyday life; it may also involve conflicts and changes (Lie & Sørensen 1996, 10–11). Lehtonen (2003, 368), for example, in a study of the domestication of digital technologies, observed that his interviewees were simultaneously enthusiastic about and critical towards the new products. A certain reservation with respect to novelties was considered a virtue, and it was thought unwise to surrender immediately to a whim. On the other hand technology has a tendency to habitualise. The more customary it becomes, the less its presence is noticed. Technology and its suitability for our own everyday purposes is no longer 'tested' in the way it once was. There are fewer surprises – and if there are any, they are unpleasant: things do not work as they should. (Ibid., 377–378.) Pantzar (1997, 54) remarks that the nature of new goods changes as they are domesticated: toys become instruments, luxuries necessities, pleasure comfort and sensations routines. In time, goods become systems of commodities, and there is less freedom in their use, because they become part of a larger complex, such as a lifestyle. The use of a commodity is increasingly determined according to situational factors, routines and social norms and less and less as the consequence of personal preferences. As commodities spread and anchor on to everyday life, they begin to develop mutual dependence and the networks of commodities become increasingly tight. This is why according to Pantzar, it is equally important to examine how people begin to repeat and renew their choices as it is to ask why they originally made a particular choice. (Ibid., 54–57.)

3.3 Food in the world of objects

The primary focus of attention in previous research on appropriation and domestication has been on objects in general or such lasting commodities as antiques, or new technologies that usually occupy a place in homes for years if not decades. Food, being perishable, thus represents a special case as an object for consumption. It is interesting to note that the perspective of appropriation or domestication has not previously been applied in food research, even though the importance of research into ordinary, everyday consumption has specifically been stressed in recent years (e.g., Gronow & Warde 2001a, Warde 2002, 19). In the following I examine the particular features of foods as goods to be appropriated.

Food has a short life span: people have to keep growing and collecting or buying it. Buying food is a mundane, everyday and often routine affair that does not – or at least not always – require great inspiration or insight. Food is also a 'composite commodity' (Douglas & Isherwood 1979, 96), because

many foods are not consumed as such but in combination with others. We appropriate or singularise (Kopytoff 1986) food in the kitchen, by cooking, by creating new combinations, in most cases out of raw ingredients purchased from a shop, to suit our own lives, our own and our family's expectations and valuations. Food is a sign of community, sharing and socialising with family and friends, and it can be regarded as a token of parents' love for their children. What we eat embraces moral values, views of what is right and wrong, good and bad. It reflects the family's internal division of labour and roles, its expectations and what is considered healthy and nourishing. (See Mäkelä 2002.)

Another special feature of food is that the concept of incorporation attached to appropriation has a special, literal meaning in connection with eating. Hirsch (1992), for example, has emphasised that consuming is always about 'incorporation' in a given social situation. In this sense food can be regarded as just as indestructible as technical devices or, say, art. We incorporate food as we eat; it becomes part of us, to such an extent that we even think we are what we eat (e.g., Fischler 1988, 279; Falk 1991, 72; Falk 1994, 14). It can be claimed that the material interaction stressed by Dant (2005, 111) is particularly concrete in our relationship with food. Our interaction with food is unavoidably more intimate than with, for instance, household durables, because the effects of food are simultaneously direct (food can, for example, be sensed, and it provides energy and satiety) and indirect (in that the food we eat may affect our well-being years later). The appropriation of food may therefore be an exceptionally sensitive element of consumption in which cultural features and traditions, and in modern society, also science, technology and knowledge of nutrition, are particularly noteworthy. Food represents many different kinds of demands made of the modern individual: it is necessary to be familiar with the traditions, norms, codes, tastes and the social classifications of food, but also to reflect on food as a material affecting health and well-being. Gronow's (2004, 54–55) idea of the two social worlds of food, the culinary and the dietary, depicts this division. The culinary world values cookery and etiquette, whereas the dietary world emphasises health and fitness. Gronow argues that people in these two social worlds assess and evaluate food from different perspectives. By understanding the social worlds of food we can better understand people's ideas and practices of eating without reducing them to individual 'idiosyncrasies' (ibid., 57).

Many consumption researchers, such as Douglas and Isherwood (1979), have underlined that even the most mundane consumption objects such as food are important carriers of meaning and objects for categorisation. Food is no lesser a bearer of meaning than, say, ballet or opera. They all communicate values and are used to signify and classify. Their choice constantly creates new distinctions. (Ibid., 72.) One of the best-known scholars of food-related classifications and distinctions is Bourdieu (1984). In his analysis of

habitus and practices, Bourdieu explicitly uses food and eating habits to describe differences and distinctions between social groups. According to him, eating and the way foods are used reflect deeply entrenched differences that tie in with the division of cultural and economic capital. Income alone does not explain the variation in eating in a particular society; rather, the explanation must be sought in cultural differences and the kind of food to which each group has potential access. Food thus acquires different meanings depending on whether it is a basic necessity or whether the individuals are free to choose, experiment and perfect their culinary art (Ibid., 1984, 177–178; see also Murcott 1983; Mennell 1985). Food is for Bourdieu an inseparable element of lifestyle and habitus.

Food, and especially meat, is, on the other hand, something of an anomaly as part of material culture in which the focus is on inanimate objects made by human hand (Dant 1999, 11). Food (meat) is on the one hand material and hence an inanimate 'thing', while on the other it may be living, or at least it has been so at some point. Dant claims that dead beings have a tendency to become things, yet they never completely lose their being-like nature. Food thus defies being categorised as a thing. It lies somewhere in the zone between the inanimate and animate, culture and nature, representing both sides but irreducible to neither (cf. Fiddes 1991, 89).

As a commodity to be appropriated, food is also unusual in the way it is acquired. Carrier (1995, 115–124), for example, has stressed the significance of both the cooking and the buying event in the appropriation of food. According to him, going shopping has acquired more and more significance as a means of appropriation now that the degree of food processing has grown and cooking has become simpler than ever. When shopping, people make choices, and the choice is in itself part of appropriation. In the selection process the object becomes special, it is singled out from the undifferentiated mass as a personal choice. Carrier argues that the discrepancy between the impersonality of the supermarket and the meaningfulness of the foods that it sells means that transforming foods into meals is a major, though mundane part of appropriation. At home, foods that were sold as commodities are used to make dishes and meals that are important expressions of the family's social relations. The special nature of food as a commodity has also been noted by Kopytoff (1986, 75), according to whom foods are typical 'terminal commodities' that are only seldom exchanged for others once they have been taken home.

Hence food as an object for consumption and identification differs in many ways from the consumer durables or technical devices in the home that take up room and are constantly visible in the domestic space. As seen above, in human-object studies food is indeed regarded as a special case, even though at the same time it is stressed that food is similar to other commodities in that it, too, needs to be appropriated. From the latter perspective, food is part of the material world that constructs human relations

and it has material consequences both for the environment and for human well-being. As we have also seen, food has been touched upon in the theoretical discussion on object relations, but it has not featured widely in studies of appropriation. Neither has food been in focus in studies of domestication of technology, which have concentrated particularly on new information and media technology. An exception in science and technology studies is genetically-modified foods or more generally, biotechnology, which have attracted attention (e.g., Jamison & Hård 2003; Rask 2003). However, these studies have concentrated mainly on the social, ethical and political dimensions of biotechnology, and on the differences between the discourses among laymen and experts (e.g., Levidow & Carr 1997; Wynne 2001). To some extent the fact that there has so far been very little genetically-modified food on sale in Europe probably accounts for the small volume of research on its appropriation.

The ambivalence of functional foods as a special area of food makes them an interesting case to approach from the perspective of appropriation. Functional foods have – or so it is claimed – concrete health effects in the human body, but at the same time there is a fundamental uncertainty as to the future health of any individual irrespective of the use of functional or any other foods. Functional foods can be seen as mediators in a food-health relationship in which the aim is to make the relationship between the material (food) and the consequences (health) understandable in a practical way, in a commodified form. As food products functional foods are on the one hand very mundane commodities, and in order to find a place in people's everyday lives, they must become part of daily routines of eating. On the other hand, they are a result of scientific and technological developments in food research and the food industry, and as regards the precision of their effects they come close in idea to medicines. There is thus a multiplicity of factors making functional foods different from conventional foods and playing a role in their appropriation.

3.4 Practical and conceptual appropriation

Various qualifiers are often attached to appropriation, 'cultural' and 'social' being among the most common. They are, however, used in different senses. Mackay and Gillespie (1992, 698), for instance, speak of the social appropriation of technology in their discussion of users and their adoption of technologies. According to them, technologies are subjectively appropriated in processes in which the codes written into the technology encounter the individual ways of using it. (Ibid., 709.) Hård and Jamison, on the other hand, use the concept of social appropriation to describe the appropriation of technology in a broader, social and societal sense (Hård & Jamison 1998, 4). 'Cultural appropriation' is in turn used to denote the study of technol-

ogy in the context of other life-worlds and practical activities (Jamison & Hård 2003, 82; see also Dant 1999, 38). Jamison and Hård (2003) stress that the processes of cultural appropriation are asynchronous, overlapping and inter-related in complex ways. In addition, new products and technologies influence everyday practices while at the same time affecting, at discursive level, what people say and think. They filter through into the institutional arrangements as well as into linguistic practices, producing new words and concepts and transforming the meanings of existing ones. (Ibid., 88–89.)

In addition to the social and cultural aspect, it has been noted that appropriation involves both practical and symbolic work. Appropriating even the smallest object requires that the object be assigned a place not only in the physical but in the mental space as well. (Douglas & Isherwood 1979, 75; Lie & Sørensen 1996; 4, 17; Elzinga 1998, 23.) In everyday life people constantly have to learn new skills, digest new information and reflect on the consequences of their own choices. When they take objects into use, they establish new practical routines that do not necessarily observe the script the designers of the product had in mind. Objects and technologies acquire meaning only in interaction with everyday life.

Geels (2005, 41) has suggested that in adopting new technologies people rely for support on what already exists in their everyday lives and its categorisations. New products and technologies are approached through existing concepts, categories and rules. Not until later does the new technology 'come into its own' and acquire its own meaning. To give an example: when the first cars arrived in the streets, they were described as horseless carriages (ibid., 44–45). Another example is from the end of the 19th century, when Oglala Indians in North America domesticated new, white people's foods by means of a 'metaphorical extension' in which the new foods were likened to the old. The cow, for example, was called a 'spotted buffalo', a peach a 'hairy apple' and flour 'bread dust'. (Powers & Powers 1984, 64, 80.) We name the new, be it food or some technical device, according to familiar categorisations and assign it meaning using the world we know.

Previous researchers have noted that appropriation involves different aspects, such as cultural and social appropriation in society as well as mental and physical appropriation in everyday life. However, even though there have been numerous studies of consumers' appropriation of new products and technologies, they have not made use of the distinction between mental or symbolic and physical or practical appropriation. The studies have concentrated on the role and significance of objects in people's lives without, however, differentiating between the two aspects.

In this dissertation, I look at the appropriation of functional foods by making an analytical distinction between what I term conceptual and practical appropriation. The central idea in conceptual appropriation is that the objects carry meanings and take their place in everyday thinking and

concepts. They exist not only physically but also 'in our heads', in the ways we see and conceptualise the world. Objects work on what is already there, both physically and conceptually; they do not enter a void waiting to be filled (Strathern 1992, viii). The new technologies and objects are on the one hand linked with the existing concepts and interpreted with existing categorisations; on the other hand they have the potential to transform and renew old classifications. The processes of appropriation are not purely individual; they take place in a socio-cultural environment that shapes the meanings of commodities. At the same time the environment sets certain limits to the extent to which meanings can be transformed in appropriation and use.

The term I use to denote the everyday and material side of appropriation, i.e., living with objects, is practical appropriation. It is part of the material nature of objects that they are taken into use and find their place in homes and everyday life, sometimes also at work. They become a concrete, material part of life and their loss would leave a physical void. They are part of everyday life in a very concrete way, and they become part of the routines that give order to life. Once objects have occupied a permanent place in our lives, we no longer actively debate or question their existence. My argument is that in examining people's relations with everyday objects, it is important to consider both aspects of appropriation and their interaction, because one does not exist without the other. In seeking to understand consumption, it is not enough for us to look only at the use of products or only at their meanings and symbolic functions in social life. It is important that we try to attain an understanding of both dimensions.

As has been pointed out, in earlier research the terms appropriation and domestication have been used with diverse, but also to some extent similar meanings. In this summary article I use the term appropriation to refer to the conceptual and practical process of making functional foods 'own' among consumers. There are two reasons for choosing the term appropriation instead of domestication. First, although the approaches and ideas originating in social studies of science and technology have to some extent inspired and directed my own approach, the present study is, in its background and objectives, more closely related to the tradition of consumption research than to that of technology studies. The concept of appropriation is more familiar and more widely used in consumption research than the term domestication that has won an established place in technology studies. Second, the concepts are also in line with the distinction I made in one of the original articles (I). There, appropriation refers to the micro-level, the ways in which consumers adopt functional foods in their own lives. Domestication in turn denotes the macro-level, the broader social processes by which functional foods enter and become part of research and development, food industry, public debate, retailers' selections and finally consumers' eating habits.

4 Results

In the following, I look at the adoption of functional foods among consumers by interpreting the results presented in the four original articles from the angle of appropriation. I seek to draw the findings together by applying appropriation as a general framework, taking as my starting point the idea presented above that appropriation is on the one hand conceptual and reflexive and on the other practical, the use of the products in everyday life. The findings of the sub-studies support this idea, since they indicate that consumers' relationships with functional foods are not unambiguous. Consumers' ideas, views and opinions of functional foods may not go hand in hand in the ways that they use the products. The conceptual and practical perspectives on appropriation thus complement each other by addressing the diversity in the ways that functional foods enter people's lives.

4.1 The conceptual appropriation of functional foods

The classifications and categorisations involved in conceptual appropriation and applied by consumers in deliberating the meanings of functional foods both to themselves and to others may be derived from their own everyday lives or reflect general ongoing trends in food and health. Using the findings reported in the original articles (I, II, III and IV), I have identified three themes of major significance in the conceptual appropriation of functional foods. One is the traditional vs. the new view of healthiness, the second the ideal of natural food, and the third trust and risks; all three are present in various ways in the original articles. The themes bind the observations presented in the original articles into broader complexes that characterise people's ways of reflecting on and conceptualising a new kind of healthiness and foods that commodify it.

Traditional and new healthiness

The ways in which consumers conceptualise functional foods and the foods they may think of as possessing health-promoting properties are closely connected to their classifications of healthiness and unhealthiness. The way we regard food as healthy or unhealthy, good or bad, is one of the fundamental classifications – or to use a Lévi-Strauss term (1963, 86) gustemes – of food and attempts to create order in the world of food. Everyday eating and the choice of food are, according to Ilmonen (2007, 174), characterised

by a 'nutritional attitude' in which it is possible to distinguish a quantitative dimension tied to the energy content of food and a qualitative dimension that can be described as 'life management'. The focal point of the latter is that food is seen as one aspect of the control of health and the body. The idea of food and eating as life management has been strongly supported by the nutrition-science project at the core of which lies the promotion of healthy eating habits.

In Finland the message of the dietary guidelines has changed very little in the past few decades. What matters most is the diet as a whole, which should be varied, balanced, moderate and enjoyable (e.g., National Nutrition Council 1998 and 2005a). The most recent Finnish recommendations of 2005 urge people to 'choose wisely' (National Nutrition Council 2005b). Healthy food is depicted as tasty, varied, colourful and rich in vitamins and minerals. Whereas healthy food was at one time illustrated by a food circle or food pyramid, the 'correct' meal is now concretised by the plate model in which vegetables cover half the plate, the main food takes up one quarter and the remaining quarter is for potatoes, rice or pasta. The meal may be accompanied by whole-grain bread and vegetable spread, skimmed milk or buttermilk and berries or fruit for dessert. (National Nutrition Council 2005a, 35–36.) I call this primary content of the dietary guidelines and recommendations aimed at the public at large the traditional view of healthiness. In it healthiness is determined on the one hand as eating as a whole, while on the other hand it can be interpreted as drawing a distinction between good foods and bad.

My results show that consumers are familiar with both kinds of healthiness, the idea of the diet as a whole and the idea of separating the good foods from the bad. My interviewees talked about variety, balance and moderation, stressed the balance between the energy supplied and that consumed and even mentioned the plate model as the ideal of healthy eating (IV, 387–388). In addition, consumers seem to have no difficulty listing healthy and unhealthy foods. According to my findings, vegetables, fruit and berries, whole-grain products such as rye bread and porridge, fish and in general food that has been processed as little as possible are seen as healthy and good. By contrast, foods containing a lot of fat, salt and sugar are seen as unhealthy and bad, as are processed products that have to a great extent lost their 'natural healthiness' (IV, 388; Niva & Piiroinen 2005, 77–78; see also Mäkelä 2002, 27).

What is interesting is that the distinction between healthy and unhealthy is not a product of our times. Food has been associated with health for thousands of years, and the models for a healthy life in days gone by still live on even in modern cultures (see, e.g., Beardsworth & Keil 1997, 137; Bradby 1997, 219–225; Jauho 2007, 321–326). According to Ilmonen (2007, 176), the categories of 'healthy' and 'unhealthy' as we know them today emerged from the 19th century onwards, as rationality and health began to be em-

phasised more and more in the discourse on eating. As products processed by the food industry began to play an increasing role on the market in the first half of the 20th century, the classifications of healthiness also began affecting everyday thinking. Food that had lost its 'natural' properties, such as white bread, sugar, sweets and cakes, was defined as unhealthy (Coveney 2000, 105–106). According to Lupton and Chapman (1995, 478), the division of food into healthy and unhealthy can be interpreted as an attempt to solve the omnivore's paradox (Fischler 1988, 278): we are curious to try something new but at the same time wary of the risks of the unknown. The attempt to solve this paradox nevertheless generates new tensions, such as those between foods that are good for the health and ones that give pleasure but are bad.

In relation to the traditional view of healthiness functional foods represent an anomaly in which healthiness is no longer determined as overall diet but as individual foods – and furthermore often specific brands – created through research and development. Being products in between food and medicine, they represent a new concept of healthiness and thus unavoidably question the traditional view of healthiness (I, 440; IV, 385). They communicate a message different from the earlier one: health promotion is targeted at each health complaint and food in turn. The relationship between 'functional' and 'healthy' is multidimensional and the concepts do not fully coincide. My findings show that to some extent they overlap in consumers' categorisations, but different foods acquire different meanings in relation to them. Many traditionally healthy foods are also regarded as functional. In Finland this is probably due partly to the Finnish term 'terveysvaikutteinen', which literally means 'health-affecting'. The Finnish term thus differs from the one – functional – used in many languages. It is natural to equate 'healthy' with 'health-affecting'. Many consumers think that 'functional' applies not only to special products but also, and in particular, to vegetables, fruit, berries and juices, rye bread and other whole-grain products. (IV, 388; see also Niva et al. 2003, 70; Niva et al. 2005, 83–85.) In addition, the line between healthy and functional seems to be constantly shifting as compounds promoting health are also discovered in ordinary foods and more precise knowledge is established of the ways in which they affect the human system.

The foods marketed as functional are not, on the other hand, automatically classified as 'healthy', and consumers to a great extent classify healthiness in accordance with the traditional view presented above. This is revealed in both qualitative (IV) and quantitative analysis (Niva et al. 2003; Niva et al. 2005). The consumers in my focus group discussions associated healthiness with foods traditionally regarded as healthy and emphasised the importance of a varied diet and balanced energy input and requirement. Functional foods did not, by contrast, play a part in their reflections on healthy eating. (IV, 388.) Earlier quantitative research using factor anal-

ysis in turn demonstrated that in relation to healthiness, most functional foods were associated with products marketed as light or fortified, as distinct from foods traditionally classed as healthy or unhealthy (Niva et al. 2003, 67; Niva et al. 2005, 83).

Many studies have observed that people seek balance in relation to food. Backett et al. (1994, 279) describe how ordinary people seek to strike a balance between good and bad in their health behaviour, avoiding excesses of both healthiness and unhealthiness. A similar idea was adopted by many of my own interviewees (IV, 388–389). Their overall aim was balance, finding the golden mean (see also Fischler 1986, 961). People make compromises in their everyday lives: if you eat too much, you take more exercise. No individual field of life, such as work, exercise or food, must acquire too much significance, because it would upset the delicate balance. Paradoxically, a completely healthy life is impossible, because optimally healthy lifestyles are interpreted as a sign that health has begun to dominate life to an 'unhealthy' degree (cf. Pajari et al. 2006, 2609; Keane 1997, 182). According to Fischler (1986, 961), modern man juggles with many dimensions: pleasure and health, gratification and duty, appetite and reason. In a culture that stresses individuality the dilemma between self-control and pleasure is always present, and the quest for pleasure may in itself be regarded as 'healthy' (IV, 389; see also O'Sullivan & Stakelum 2004, 35).

Functional foods may therefore be one of the means to pursue a balanced diet. We can detect two alternative ways for this. First, it is possible that people try to compensate for habits regarded as gratifying but unhealthy by eating functional products and thus meet their moral obligation to try to keep fit. This idea can be seen in the marketing of functional foods: e.g. functional drinks and fibres are recommended for the busy consumer to steady his or her overstressed stomach. My earlier results, however, indicated that such 'compensating' use is often frowned upon by consumers. It is considered neither good nor acceptable for functional foods to compensate for a healthy and varied diet. (Niva & Jauho 1999, 55.) The second option, supported by my findings in articles II and III, is that functional foods may be a 'complementary health practice' (II, 23), .i.e., that they form part of a healthy diet. Functional foods are indeed more likely to be used by consumers who regard healthy eating as important (II, 17–18, 22), and the healthiness of food also plays a role in consumers' views on functional foods. Those who regard healthiness as important have more positive experiences of functional foods and are more confident as to their quality and safety (III, model 3, 39–40). The idea of functional foods as part of a healthy diet is also adopted in marketing and regulation. According to the EU regulation (1924/2006, Art. 10, 2a), the use of health claims is permissible only if accompanied by a statement indicating the importance of a varied and balanced diet and a healthy lifestyle. Thus both consumers' everyday categorisations and marketing appeal to conflicting arguments in seeking to achieve a balance. On the one

hand products may in themselves create a balance if the rest of the diet is not 'sufficient', but on the other hand they represent an additional, supplementary bonus to an already healthy lifestyle (cf. Falk 1996, 197).

Previous research has noted that categorisations of healthiness often reflect the idea that the human body can be likened to a machine or engine. In this discourse the body is a machine to be serviced and kept in trim; the heart is the body's pump and food its fuel. (Lupton & Chapman 1995, 485; Saltonstall 1993, 10; see also Turner 1982, 25.) However, in my own findings a more salient idea, contrasting with the mechanical body maintained from outside, was an introspective view emphasising the wisdom of the body. An individual sense of well-being then acquires more weight than external advice about what to eat. The body is thought to 'tell' us what it wants and the suitable food, exercise and rest; we just have to listen to the body's messages. (IV, 390; see also Lupton & Chapman 1995, 490; Keane 1997, 181–182.) The idea of the wisdom of the body in everyday thinking illustrates the emphasis on individualism in contemporary health ideals. Consumers situate the message of nutrition education, presented as universally applicable, in the context of their personal world of experience and the idea that what suits one does not necessarily suit another. The borders between healthy and unhealthy are thus blurred: the harmfulness of fat, salt and sugar depends, just like the usefulness of functional foods, on individual characteristics and conditions. Only personal experience can tell whether a particular food, be it functional or ordinary, will prove suitable or not. (IV, 390.)

Natural food and scientific knowledge

Fischler's well-known idea of gastroanomy (1980, 948) suggests that people have become alienated from food and that its relationship with their identity is blurred. The former norms, regulations and restrictions that gave eating regularity and stability have eroded and food has become an increasingly individualised part of life for the contemporary consumer. We know less and less about what we really eat: food has become an unidentified edible object (Fischler 1988, 289) with neither a history nor an identity. According to Fischler (1980, 949 and 1986, 962–963), health and medicine seek to fill the void created by individualisation but without fully succeeding. From the perspective of appropriation, emphasising healthiness is one way of attaching food to something concrete and of giving it meanings. Functional foods give substance to the striving towards healthiness, because they are a material, targeted and 'scientific' way of making healthiness part of everyday life. (I, 441.)

Scientific and medical knowledge is an increasingly significant factor in shaping dietary practices and food culture. As Gronow (1991, 34) has noted, our concept of what eating 'properly' means has undergone a permanent change: the 'right' food is no longer that which tastes good and gratifies but that which science has proved in a laboratory to be healthy. Scientific

knowledge is no longer confined to researchers and experts alone; nor is it just background data for nutrition recommendations. Through foods advertised as functional or otherwise healthy, science has become part of our food markets and the public debate on food (I, 446). The foods we see every day in the shop contain information the interpretation of which requires more than a knowledge of the importance of a varied diet. Consumers are assumed and expected to be able to interpret the information and to use it to make the choices that best suit themselves and their families. Underlying this is the assumption of a rational consumer who seeks knowledge, makes the right interpretations and the best choices with regard to nutrition and health.

Chapman (1999, 75–79) has pointed out that the scientification of eating is also manifest in the lay discourse that emphasises a healthy lifestyle, criticises quick miracle diets and stresses the need to bring about lasting change. My results support this view as they indicate that a rational and scientific approach is an important element in consumers' approaches to food and health. Consumers in the focus group discussions were well aware of the basic tenets of healthy eating (IV, see above), and my quantitative data showed that most respondents paid attention to the healthiness of food and thought that it is important to follow expert advice on healthy diet (Niva et al. 2003). Other studies show similar tendencies: Piiroinen and Järvelä (2006, 20–21) report that a large majority of Finns regard healthiness as an important aspect of food, say that diet is for them an important means of taking care of their health, and agree that they eat a varied diet as specified in the nutrition recommendations. (See also Aarva et al. 2005, 60–61.)

One interesting aspect of scientification is the public critique of science itself. Both my study and others show that a salient feature in consumers' notions of the links between eating and health is the idea of the inescapable uncertainty of all knowledge, scientific included (IV, 390–391). Although people know that fatty food is bad for them, they also know that even those who observe a healthy regime can have a heart attack. The 'lay epidemiologies', in other words the mundane explanations for health and illness, do indeed recognise the importance of such factors as diet and exercise, but they also allow for factors such as heredity over which the individual has no control (Davison et al. 1991, 16). Whereas the public discourse on healthy eating often uses epidemiological observations as if they were causal explanations, the lay epidemiology is much more critical. People do not necessarily see public healthy eating advice as being relevant to them personally, because it does not allow for individual differences and contexts (Keane 1997, 187). In the lay epidemiologies functional foods can be questioned on grounds that they do not work in the same way for all, and my findings show that people use their own experience as an argument for doubting the efficacy of products. For example, consumers in the focus group discussions (IV, 390–391) talked at length about the potential side-

effects of a cholesterol-lowering margarine and referred to their experiences of the adverse effects of the product. There were ex-users of the margarine whose cholesterol levels had, unexpectedly, risen when they started to use it. These results indicate that at least some consumers are – either because of their own experience or because they recognise scientific uncertainties – well aware of the fact that foods, including functional ones, do not affect everyone in the same way.

At the same time the future orientation of functional foods inevitably introduces a note of uncertainty. To give an example: consumers are aware that eating a cholesterol-lowering spread and lowering their cholesterol level may reduce the risk of heart disease in the future but it will not guarantee the absence of the disease (IV, 390–391). The cholesterol-lowering foods are examples of health effects that cannot be personally detected without tests and medical observation. They are an expression of the future-oriented project in which health acquires meaning through the prevention of disease (see Falk 1996, 190).

However, while food production is becoming dominated more and more by science and technology, idealised concepts of nature and naturalness are stronger than ever (Lien 2003, 194). In our culture industrial is equated with artificial and unprocessed with natural (see IV, 388). Nostalgia – the idealisation of the simpler technology of eras past – is in fact typical of the concepts of natural (cf. de Garine 2001, 501). According to Lien (2003, 209), milk, for example, is a food the handling of which has become increasingly technological with the passing of the decades. The change has, however, been gradual and within the confines of our cultural conventions, with the result that the trend has been accepted as a matter of course. Milk is still regarded as a product of nature. Lien's findings are supported by my own results indicating that in consumers' ratings of healthiness of foods, the milk marketed as functional was associated with the 'healthy foods' category, unlike most other functional foods that constituted their own dimension together with 'light' foods (Niva et al. 2005, 84). Lien suggests that the demand for naturalness has grown stronger as technology has become visible in the new foods. People want nature to 'remain', if only to a small degree. The category of 'natural food' and nostalgia for natural food could not exist were it not for the strengthening counter-category: food regarded as artificial and technological (see Miller 1987, 114). From this perspective, functional foods, as far as they are regarded as industrial, artificial and technological, are part of the very process that produces demands for natural and authentic food.

My results suggest that functional foods acquire meaning and are appropriated as part of a trend in which the scientification and technologisation of food and its production are seen as opposed to the natural and unprocessed (III, 41; IV, 391; cf. Mäkelä 2002, 28–30). According to the quantitative results, the consumers who criticise technology are more critical than others of functional foods. They trust the quality and safety of products

less than others, are worried about what functional foods mean for eating more generally and are raising their voices more than others in demanding research and regulation. Nor do they have good experiences of functional foods as often as others do. (III, 39–40.) On the other hand, naturalness and functional foods are not necessarily totally incompatible. People may wish their food to be simultaneously natural and unprocessed yet health-promoting with the help of technology (Niva et al. 2003, 80). My qualitative results indicate that people differentiate between inherently healthy foods and foods designed to be functional, and that they talk about both healthy foods and healthy eating without referring to functional foods (IV, 388). This implies that healthy eating ideals are strongly linked with the ideal of the natural, and that functional foods do not, at least yet, occupy a place in these ideals. These results are in line with the studies that have indicated that the criticism and public opposition are not necessarily aimed at technologies and products as such but at what they mean in everyday life and social relations, especially families' internal moral economy (Hirsch 1992, 222). Appropriating technology is challenging if the technology is felt to threaten the family's fundamental values, objectives and sense of community. Technology can create moral tensions by changing the social relations, use of time or collective ideals (cf. Campbell 1992, 58). This is why it is difficult to make highly-processed functional foods compatible with the ideal that foods are as unprocessed, as 'pure' and as 'natural' as possible (IV, 388).

Social practices, discourses and experiences produce and shape our concepts of nature and the values attached to it as well as our views on what is natural (Macnaghten & Urry 1998, 2). According to Lien (2003, 210), our concepts of nature are, as cultural constructs, both controversial and persistent. However, Lien also stresses that in time, technology becomes naturalised, and products such as processed foods gradually become natural and self-evident. Results of both earlier and my own studies suggest that the relationship between what is considered natural and technological varies not only in time, place and culture but also between individuals (I; III; IV; Jonas & Beckmann 1998, 19; Poulsen 1999, 21, 37; McConnon et al. 2004, 17; Huotilainen & Tuorila 2005, 569). What is natural to one may to another represent highly developed and processed. Hence our concepts of the naturalness or technologicalness of functional foods are mutable and variable. It is relatively easy to conceive of functional foods such as milk, inherently regarded as healthy, as being not only functional but healthy, too, in the traditional sense. By contrast, products marketed as functional but felt to be unhealthy or containing novel, functional substances are not easy to fit into our existing categories. However, the categorisations change and are modified in time as functional foods are domesticated on the market, in public discourse and everyday practices.

The flourishing ideal of natural food is intereesting in the sense that food has been growing increasingly technological and industrial for a long

time. The use of machines and technology in food production and manufacture is nothing new, any more than the tendency to describe novel foods as scientific breakthroughs. Such claims were already being made of American food inventions and their marketing in the late 19th and early 20th century. Consumers had to be convinced that they needed such brand-new products as toothpaste, chewing gum, canned foods, breakfast cereals and many others (Strasser 1989, 89–123). Breakfast cereals were marketed in the early 20th century with promises of energy, happiness and beauty. Vitamins were hailed as revolutionary scientific progress adding new, positive elements to the diet (Falk 1996, 195). In the late 1800s, Coca-Cola was marketed as a health drink giving spiritual and physical strength – just like the functional well-being drinks on offer today. These examples show that from the perspective of marketing, functional foods may not be that novel after all, even though for contemporary consumers they may represent a new kind of healthiness. (I, 447.)

Trust in a risk society

Food has always been potentially dangerous (Fischler 1988, 278). As societies have grown more complex, the dangers have nevertheless acquired different forms. Whereas in former societies food may have been dangerous primarily as a result of poor hygiene and of perishing, today's food risks more than ever spring from the way the food is produced and processed. We live in a risk society in which the risks are socially produced and even scientific knowledge is unavoidably questionable (e.g., Beck 1999, 119–121; see also Giddens 1990, 7–10). This being the case, trust acquires ever greater significance, since our lives are characterised increasingly by global dependencies and uncertainty at both personal and societal level. Though the part played in our lives by various expert systems is growing, these systems are limited in their ability to manage all risks. The concepts of trust and risk are inextricably linked with the significance of scientific knowledge, technology and expertise in modern society. (Misztal 1996, 2–8; see also Giddens 1991, 3.)

The problems of risk and trust are evident in the production and consumption of food and in our views on food. The new technologies and manufacturing methods introduce risks of a new kind into food and endow trust and distrust of food with new meanings. According to Berg and Kjærnes (2001, 235), trust is a concept that links food policy with everyday life. The buyer of food has to be able to trust that the systems and institutions producing it operate so that it is safe and of good quality. Two forms of trust in food can be discerned: institutional or systemic trust that is often referred to as confidence, and personal trust in individual actors and networks that is referred to as familiarity (Kjærnes et al. 2007, 198–199; see also Luhmann 1979, 50; Giddens 1990, 83). Doubts and distrust of food are, however, seldom directly evident in everyday diets, meals and food choices, but in less intimate and social domains, such as markets and public debate

(Kjærnes 1999, 268; see also Kjærnes et al. 2007, 186). Trust can be regarded as a public good (Misztal 1996, 2).

It is one of the paradoxes of trust that though the scientific basis of the food sector has rapidly developed and knowledge of food has increased, we are more uncertain than ever of what is safe to eat. (Berg & Kjærnes 2001, 236–237.) The numerous food crises reported in Europe in recent years have not directly affected functional foods. The safety of these foods has not been questioned to any large extent. Yet it cannot be taken for granted that functional foods are risk-free. Safety and efficacy have been identified as key aspects in the scientific assessment of functional foods and the safety of new functional ingredients as well as the effects of different dosage levels needs to be assessed case by case (Palou et al. 2003, S13). From the perspective of trust, functional foods that lie on the borderline between food and medicine are problematic because we are used to seeing the functioning and the responsibilities of the food industry and the pharmaceutical industry very differently (Meijboom 2007, 240). In addition, as pointed out by Kjærnes et al. (2007, 196), trust in food is related to the whole institutional framework of food production, retail, control and consumption. The norms and expectations of different actors must meet in order for trust to emerge. This means that if the expectations of the actors, especially consumers, are not met, the increasingly technological, global and distanced institutions of food production may produce a generalised distrust in all food (ibid., 199).

The discussion of functional foods has not escaped these problems related to trust, risks and the role of different institutions in guaranteeing safety. Although trust in abstract systems is often unreflected (Luhmann 1988, 97; Giddens 1991, 133–135), it is by no means unambiguous. Trust in both safety and efficacy is an integral factor in the conceptual appropriation of functional foods. Without them, these foods would have little chance of succeeding (see I, 444). These perspectives were studied in article III, in which the results of a principal components analysis suggested four dimensions that could be distinguished in the acceptability of functional foods. First, consumers' own experiences of functional foods are significant. The more favourable the experiences are, the more consumers will be inclined to believe that functional foods are good for the health and necessary even for healthy people. The second and third dimension to some extent cover similar issues, but from different perspectives. The second dimension is the quality and safety of products, such as trust in the safety examination of functional foods and the quality of Finnish functional foods, whereas the third includes broader, societal perspective on concerns, such as the implications of functional foods for eating and the suitability of functional foods to children. The fourth dimension is related to views on the need for research, the regulation and control of functional foods. (III, 37–40.)

These dimensions reveal that the acceptability of functional foods is a complex phenomenon (III, 42) and that there are indeed separate dimen-

sions in consumers' views on and trust in functional foods. For instance, people's experiences of functional foods might not be directly linked to their views of the quality and safety of the products or the role of research and regulation in guaranteeing their safety. None of the dimensions of acceptability is alone sufficient to explain opinions of functional foods, because the same people may assess things in different ways as the perspective changes. For example: regardless of whether their experiences of functional foods are good or bad, people may demand that functional foods be researched, regulated and carefully controlled (see Niva et al. 2003, 34–35). Regulation is important not only for reasons of safety but also because it generates trust that the products will prove functional as promised. Trust gains meanings of two kinds in functional foods, both 'negative' and 'positive'. Trust implies faith that the goods will not prove dangerous over the long term in some unpredictable manner, but also faith that they will fulfil their promise to promote health and well-being now and in the future. Both involve trust in modern science and technology promising that the products contain ingredients that really are beneficial to human beings. (I, 444; III, 42; IV, 390–391.)

The analysis of variance models showed interesting differences in how consumers' sociodemographic and health-related backgrounds and their ideas about healthy eating and technology in food production were associated with trust in functional foods (III). First, age and education were to varying degrees related to the four dimensions of acceptability. The middle-aged (45–59-year-olds) had the most positive experiences of functional foods whereas the elderly (over 60-year-olds) were most concerned about functional foods. Those with the least education had less positive experience, were more concerned and cared less about regulation[4] than others. This suggests that socioeconomic factors are significant in the appropriation of functional foods: people with the weakest resources have the poorest opportunities to buy functional foods and are less eager than others to do so. Women and men did not seem to differ in their views on functional foods – apart from the very weak indication of women's more positive experiences when the model configuration was altered (see III, 41 for details). Some earlier studies have concluded that sociodemographic variables explain the differences in acceptability only poorly (Urala & Lähteenmäki 2003, 150; Verbeke 2005, 52), others indicate that there may be differences (Urala et al. 2003, 823), but they may be largely product-specific (Ares & Gámbaro 2007; 153). My results suggest that when the multidimensionality of acceptability is taken into account, the sociodemographic differences become at least somewhat more clearly discernible (cf. Urala & Lähteenmäki 2004, 799–801).

On the other hand, my findings are in line with other studies indicating that the sociodemographic backgrounds are outweighed by other factors more directly linked with food and health (Verbeke 2005, 54). According to my results, consumers' views on healthy eating and technology in

food production and on issues relating to health efforts, such as trying to lower blood pressure or blood cholesterol, taking vitamins or natural health products and taking exercise were associated with the acceptability of functional foods. The significance of these factors differed from one model to another and on the various dimensions of acceptability. They were particularly significant as regards consumers' experiences of functional foods: those who tried to lower their blood pressure and/or cholesterol levels, took vitamins or natural health products, exercised, regarded healthy eating as important and considered the use of technology in food production to be a good thing, had more positive experiences of functional foods. Optimistic views on technology were similarly related to more positive views on the quality and safety of functional foods, less concerns and less demand for research and control. Those who regarded healthy eating as important were more optimistic about the quality and safety of functional foods. It should be noted that the summated scale variable in article III (see its Appendix, 45) titled 'importance of healthy eating' includes items related not only to healthiness but also to other aspects often associated by consumers with healthy eating. The variable thus covers a complex of views on healthy, natural and unprocessed foods. Other associations were less pronounced, but the overall picture was clear: health-related efforts and ideas were linked with trust in functional foods. (III, 39–41.) My notion of functional foods as a 'complementary health practice' (III, 42) refers to this phenomenon: the conceptual appropriation of functional foods does not emerge in a vacuum but is related to consumers' practical health-related activities and habits as well as to ideas and viewpoints of healthy eating and technology in food production.

In general my results suggest that Finnish consumers are rather trusting as regards the safety of functional foods and their ability to promote health. A large percentage of the Finns believe that the increase in functional foods on the market is a good thing; that their safety has been sufficiently tested and that Finnish functional foods are good quality. The majority also report that they buy functional foods at least sometimes. Meanwhile, people are demanding that functional foods should have official approval before being marketed, that their marketing should be supervised and that the health effects should be scientifically proved. (III, 38.) This indicates that various control systems are needed in order to generate and strengthen trust; these may be called forms of 'institutionalised distrust' (Luhmann 1979, 92; Kjærnes 1999, 271; Kjærnes et al. 2007, 175–177), which are one way of creating trust in abstract systems in modern societies. It may indeed be estimated that trust in functional foods is generated at least partly by the very fact that the authorities and the research community are working to make goods safe and to ensure that consumers are not misled. The demands for research and control do not therefore signify distrust; rather, they are a condition for the generation of trust in food in a scientificating, technologising and globalising society.

4.2 The practical appropriation of functional foods

Many foods marketed as functional have found a place on the supermarket shelf. Earlier studies and my own results of their use suggest that the popular products are ones that easily take the place of other, ordinary alternatives, that do not require any special changes in everyday life and that can easily be made part of the daily routine. (II, 20; Urala et al. 2003, 819; Urala & Lähteenmäki 2003, 152.) The products that have succeeded on the market are ones that are, as a rule, ready for use immediately: they do not need singularising by using them to make meals. Functional foods typically do not need preparation; they are easy to use on a regular basis, as part of the everyday routines at breakfast or as a snack. Spreads, yoghurts, drinks and other breakfast foods are examples of product categories in which functional foods have achieved a fairly permanent place in the shops, whereas functional convenience foods, for example, have so far mostly proved to be experiments that failed.

A product with some familiar elements is easier to appropriate than one that is totally new (Carrier 1995, 112). Functional foods have to possess some familiar features that connect them with existing categories of food, but at the same time something different, new and tempting that justifies their higher price (I, 446). Campbell's (1992, 52–55) classification of types of newness also works in analysing the appropriation of functional foods. Some functional foods are conceived of as improved versions of old products, but others may be new and alien. Products that break the existing codes and categories are difficult to associate with anything familiar. In that case the process of appropriation takes time or consumers may feel that the products are not really for them. For instance, my results indicate that functional characteristics are difficult to associate with foods that strongly contradict ideals of healthiness. The functional sausage may be a conceptual oxymoron because it violates the symbolic border between healthy and unhealthy. A sausage may indeed be lightened, making it less unhealthy, but functional properties would place the sausage in a new sphere – a means of promoting health. Functional qualities are not, however, credible if in other respects the product represents an unhealthy archetype rich in fat and salt. (Niva et al. 2005, 82.) The conservativeness of appropriation processes (Silverstone & Haddon 1996, 60) is specifically evident in the ways consumers adopt new products and technologies in their everyday lives while at the same time holding on to their familiar categorisations, lifestyles and routines. The new foods are adapted to the old habits and routines, and that which already exists takes precedence over the new.

How, then, do functional foods find a place in everyday routines? One way of approaching the question is to look at who the users of functional foods are. This approach reveals to what extent sociodemographic factors explain the use of functional foods, or how the use of functional foods, for

instance, tie in with other health-promoting practices. The relatively few studies conducted on the use of functional foods have reported slightly different results about the most likely regular users of functional foods (see Chapter 1.3 for details). My own findings (see II, 17–18) indicated that functional foods can attract consumers of many kinds. There were, however, differences between the users[5] of products of different types, and as in other studies, the role of background factors varied depending on the particular products. Adjusting for the background factors also altered the picture of those who eat functional foods.

I examined the background factors related to the use of four of the most popular foods marketed as functional in Finland by logistic regression models. According to the models, the use of xylitol chewing gum was explained by gender, age, education and professional status. It was most likely to be used by women, young people, the highly educated, and by blue- and lower white-collar workers. The users of rolled oats with added bran were most probably women, people with a primary or lower-secondary education and those exercising a lot. The most likely users of cholesterol-lowering spreads were men, the elderly, the highly educated and people for whom the healthiness of food was important. When adjusting for a striving to lower cholesterol the only explanatory variable among the factors mentioned above was gender. Products containing probiotic lactic acid bacteria to promote the well-being of the stomach were in turn most likely to be used by people who valued the healthiness of food. The use of other functional foods further explained the use of all the case products. (II, 19–20.) The results indicate that functional foods do not find their way onto the tables only of people who are, according to various studies, generally most health-conscious and who in other respects observe a healthy lifestyle most rigorously, i.e., women (Similä et al. 2003, 70; Roos 1998, 1523), the highly educated (Roos 1998, 1524; Helakorpi et al. 2005; 13) and middle-aged or older people (Helakorpi et al. 2005, 93–129). They are used by consumers of all backgrounds, women and men, young and old, and comprehensive school or university educated. Different functional foods interest different consumers.

On the other hand, the findings do indicate that users share certain features that apply to most products. Women appear in general to be more probable users of functional foods than men. A high degree of education in most cases raises the probability of using functional foods. The effect of age is not quite so clear. Some products are clearly favoured by the elderly, but the example of xylitol chewing gum in particular suggests that young people, too, may be enthusiastic users of functional foods if the products meet their expectations. There are nevertheless exceptions to these basic features. Men were more likely than women to use cholesterol-lowering spreads and the less educated more likely than the highly educated to use rolled oats and bran. (II, 17–18.) The importance of healthiness explained use in the case of other products apart from xylitol chewing gum. Studies con-

ducted elsewhere report the same: there are some independent variables that often but not always apply to the use of functional foods (see, e.g., de Jong et al. 2003, 278; Ares & Gámbaro 2007, 152–153). Some products are targeted at, for example, users of a particular age, while the use of others may be explained by, say, tradition, as in the case of rolled oats and bran: the elderly are more used than the young to eating porridge.

The findings also suggest that there are both similarities and differences in general health-awareness and the use of functional foods. On the one hand the view that the healthiness of food is important generally raised the probability of a person's using the selected functional foods. By contrast, the correlation between frequent exercise and use was weaker. In addition, such factors as weight control or the use of food supplements did not appear to have any clear link with the use of the four functional foods when the effect of sociodemographic variables was taken into account. Hence, strivings towards healthiness do bear significance in the appropriation of functional foods, but the link is not straightforward. (II, 22.) What is interesting is that people categorise healthy foods and functional foods in different ways (see Chapter 4.1 above; IV, 388; Niva et al. 2003, 67; Niva et al. 2005, 83), but the striving towards healthy eating does not appear to conflict with the practical appropriation of functional foods. My results show that people may criticise the idea of functional foods or consider that targeted foods produced as the result of research and development do not belong to the domain of healthiness yet still use products marketed as functional (see IV, 390). 'Healthiness' is in itself an ideal the meaning of which in everyday eating stands in relation to many other meanings, strivings and values connected with food (cf. Mäkelä 1996, 17–18; Caplan 1997). Healthiness can be seen as a background ideal or even a norm when different foods are appropriated in everyday practices and adapted to personal eating habits. Yet everyday practices and healthiness ideals do not fit seamlessly together, and nor do people always appear to find their incongruity a problem. (See IV, 392.)

Functional foods have relatively quickly come to interest a wide variety of consumers. From the market-research perspective the products have simply become differentiated and commercialised for different target groups, but from the perspective of everyday appropriation the phenomenon is more complex. Age, gender, education and health-related views and practices do not straightforwardly predict the incorporation of functional foods in the everyday diet. People may use a particular product marketed as functional for some targeted purpose, such as to lower their cholesterol, but also because the product tastes good or, say, for the pragmatic reason that the product just happens to be in the family fridge. (I, 445; II, 21.) The higher-than-usual prices of functional foods nevertheless limit the number of users and place obstacles to their potential for promoting public health (see Schroeder 2007, 252). My results of the sociodemographic differences

in both the acceptability and the use of functional foods suggest the same thing: the possibilities of people in poor socioeconomic circumstances to buy and use new health-promoting products may be weak, and for them regular use would require a strong commitment (II, 22; III, 41).

Consumers' own explanations for using functional foods give one perspective on the process of appropriation. My findings in the quantitative study (II, 21) indicate that the reason for using a particular product is most often some concrete health effect of the product, such as its ability to promote dental health or well-being of the stomach or to lower cholesterol levels. Use is also explained on grounds that the product is healthy, functional or tastes good. Reasons given for not using functional foods include lack of interest or knowledge, the high prices of products and the absence of any particular reason to eat functional foods. It is interesting to note that only about half of the regular users of functional foods had observed that the foods had in some way affected their personal well-being. Thus functional foods do not necessarily need to afford consumers direct benefit and well-being; rather, the benefits may be assumed to be noticeable sometime in the future. Users seem to trust that functional foods will honour their promise and be beneficial in the long term even if they cannot feel the effects themselves (see Chapter 4.1 above). This suggests that consumers of functional foods indeed have a high trust in the products they use and their scientific basis.

This finding does, on the other hand, indicate that use becomes routine. We use routines to make life flow, to reduce the effort of having to constantly make decisions and to create a sense of homeliness and normality (Ilmonen 2007, 202). The mundane selecting of food as an almost daily activity is a field of consumption particularly tending to become routine. We pick out the products we usually choose, even though we do occasionally try out new alternatives. Buying and using food is most often an entrenched consumption routine (Sassatelli 2007, 108) that permits non-reflexivity and generates a basic sense of security. As Campbell (1992, 55) points out, familiarity is bred in consumption. Consumption exhausts novelty, uses it up and makes the alien familiar. Similarly to other goods, becoming routine and familiar is a central element of the practical appropriation of functional foods. A functional product is probably initially chosen for a particular purpose, for reasons of health and/or prompted by an advertisement, by the product's novelty and out of a desire to experiment. Gradually, if the product lives up to expectation, it becomes part of the regular diet and its purchase is no longer considered each time separately. It becomes part of everyday practice and takes its place in the daily routine. There is no longer a need to actively assess its special nature or its effects on the user's body and it is gradually taken for granted, just like many other foods in regular use. This seemed to have happened to the regular users of cholesterol-lowering spreads taking part in the focus group discussions:

they did not need to discuss their use at length as it was regarded as a self-evident element of everyday eating.

It must be remembered in reflecting on the appropriation of functional foods – or other consumption objects – that conceptual and practical appropriation do not necessarily go hand in hand. The distinctions made in language and ideologies do not necessarily mirror the distinctions in the world of objects (Miller 1987, 115), and the meanings assigned to products and their use may diverge, because cultural signification operates with classifications that are not always manifest as choices (Ilmonen 2007, 181; cf. Kjærnes et al. 2007, 186). My results show that on the one hand, people who are in principle favourably disposed towards functional foods do not necessarily adopt them; on the other hand, even active users may wonder whether using them may perhaps have unpredictable or dangerous consequences (I, 446; IV; 391). Ilmonen (2007, 298–299) and Lehtonen (2003, 368) have noted that people may become attached to products in which they see both favourable and unfavourable properties. One concrete example of this in my study was a case in which regular users of a cholesterol-lowering spread began to wonder during a focus group discussion whether the product might have some unforeseen side-effects or whether long-term use could be harmful to health. They nevertheless had no intention of abandoning the product, because they believed that sooner or later any harmful effects would be scientifically proved. (IV, 391.) The group here doubted the ability of science to predict all the effects of functional foods but trusted its potential for observing them in retrospect.

The above example shows that trust acquires different meanings in practical everyday action from those arrived at in a situation that encourages people to actively reflect on their trust. The discussion showed that the discussants were aware of the risks in the modern world and the uncertainties of scientific knowledge, but they could still act in their everyday lives as if these uncertainties did not exist. In a world in which the production chains are long and disjointed, producers and users only ever meet through products. In everyday life trust is indeed crystallised in the encounter of the user and the product: in buying their daily food at a shop, people do not ask themselves each time whether they trust the quality of a product or the action of the shopkeeper, manufacturer or farmer. Trust is unreflected: in Luhmann's (1988, 97–101) term confidence that the product is just as it should be.

4.3 Reflection on the data and methods and implications for further study

The above findings are based on the analysis of two sets of data and my interpretations of the results originally presented in four articles (I–IV). Using quantitative and qualitative analysis I have sought to discover how Finn-

ish consumers appropriate functional foods at a conceptual and a practical level. As a phenomenon, appropriation can be examined from many angles and by many approaches, and my data have allowed me different perspectives on the subject. I will now reflect on these perspectives, data and methods and their implications for possible future studies.

The use of both qualitative and quantitative methods in a single study is often regarded as challenging. It has been proposed that qualitative and quantitative approaches represent incompatible paradigms with different concepts of man, views of knowledge and its production. This view has, however, been questioned in recent years. It has been observed that both qualitative and quantitative approaches are needed, and that drawing a strict line between them is fruitless, as is regarding one as the antithesis of the other. (Brannen 1992, 3; Kelle & Erzberger 2004, 172.) A study may be interested in questions that require both qualitative and quantitative approaches, such as what people think of a given phenomenon and how far these thoughts are shared. In this case qualitative and quantitative analyses address different yet interconnected research issues. (Brannen 2004, 313.) Examining a phenomenon from different angles may yield a more multifaceted picture. The results do not then need to be in agreement or commensurable; they may sometimes complement or even contradict one another. (Brannen 1992, 16–17; Kelle & Erzberger 2004, 174; see also Flick 2004, 182.)

By using both quantitative and qualitative data and different means of analysis I have sought to understand the conceptual and practical appropriation of functional foods. The combination of qualitative and quantitative approaches is often referred to as the triangulation[6] of data and methods or more simply the use of multiple methods (e.g., Brannen 1992). In my study the quantitative approach has provided data on the use of particular functional foods in Finland and the dimensions of consumers' views on the products. In particular, it has allowed me to look at the sociodemographic and other background factors explaining the acceptability of functional foods and regular use of the products against non-use. The qualitative approach has given me a closer look at people's interpretations of the relationship between healthiness and functional foods and of the classifications of food and health applied in appropriating functional foods. However, combining the results of quantitative and qualitative studies has, on occasion, been somewhat challenging. Quantitative and qualitative results are presented in very different ways, and mixing these styles is not always easy. I hope to have shown that one of the virtues of the appropriation perspective is its flexibility as concerns data, methods and styles. It allows for both qualitative and quantitative approaches and encourages the search for new ideas and angles.

Research data are seldom perfect. They work better for some questions than for others, and as the research proceeds, the researcher most often begins to reflect on other possible approaches, data and questions that might lead even closer to the object for study. So it was with me, too. In the case

of the quantitative data I had to consider their representativeness, since the response rate was low (18%)[7], as is often the case in CATI surveys using quotas for various background variables (see Kjærnes et al. 1997, 54). The data represented the population in terms of gender, age and place of residence, and comparisons with studies made on health, food and eating in Finland suggested that in these respects the sample was not severely skewed (see, e.g., Helakorpi et al. 2003; Laatikainen et al. 2003). However, it seemed that the share of active users of cholesterol-lowering foods may have been somewhat larger in the sample than in the Finnish population (Anttolainen et al. 2001; 1367–1368; Laatikainen et al. 2003, 435 and 447). In general, social studies using empirical data can rarely escape the fact that they are confined to people who are interested in the research topic and have some personal reason for taking part in the study.

Quantitative studies using sets of questions with fixed scales of response inevitably produce a certain rigidity in the research setting. In addition, the selection of questions and their formulations set limits both to the respondents and to the ways in which the results can be interpreted. In my study, the statements measuring consumers' views on functional foods were developed using knowledge accumulated in earlier qualitative studies (Niva & Jauho 1999; Niva et al. 2000). When the questionnaire was devised, very few quantitative studies had been conducted on consumers' opinions of functional foods. We tried to make sure that the aspects of functional foods that had proved relevant for consumers in the earlier studies were included in the questionnaire used in this study (see Niva et al. 2003). In retrospect, a more extensive set of questions relating to consumers' views on functional foods might have been useful as this would have yielded an even wider selection of statements for inclusion in the factor analysis in article III. There was a practical obstacle to this, however: a telephone interview cannot be very long, so each set of questions had to be a reasonable length.

Despite its shortcomings, my experience is that the questionnaire worked reasonably well for the purposes of this study. First, as regards the analysis of the acceptability of functional foods (article III), an issue that needs consideration is the amorphous nature of the concept 'functional food'. Consumers may have different interpretations of the concept (as shown, e.g., in article IV), and asking consumers for their opinions using Likert-scale statements produces uncertainty as to what consumers actually had in mind when answering. Being aware of this problem, we tried to create a 'scheme of familiarity' (III, 42), a shared understanding on what kind of products may be thought of as functional. We did this, first, by telling the respondents that 'a food is considered to be functional if, in addition to the usual nutritional effect, it has some other effect that maintains health or decreases the risk of disease' and second, by asking them about their use of ten foods marketed as functional before going into general opinions on functional foods. It is not possible to say for sure how well we succeeded

but my general impression is that the respondents got the idea that what we meant was processed foods that differ from conventional foods in their health effects. The results of the factor analysis (article III) support this view. Even though the rate of explanation was relatively low, the analysis did illustrate the many dimensions of the acceptability of functional foods and it also discerned interesting sociodemographic and other differences in consumers' views on functional foods (article III). The results of article III also suggested that Finns are generally optimistic about functional foods. There is one qualification, however: the indication that there may have been some more users of functional foods in the sample gives reason to believe that the view on functional foods among the population may not be quite as positive as among the respondents. Nevertheless, my contention is that this does not overrule the general picture of consumers' views on the subject.

Second, the data used in article II were collected by asking the respondents how often they used certain functional foods. The method seemed to work well even though the percentages of regular users seemed somewhat high. As noted above, comparisons with other studies suggested that there may have been more regular users of some products in our sample or the respondents may have over-reported their use. However, the differences in user percentages between our study and others were not substantial. This allows for the conclusion that it is unlikely that this would have considerably distorted the results of the variance analysis. However, it should be mentioned that the analysis of the sociodemographic and food- and health-related background variables focused on only four products. Probably the product-specific results cannot be generalised as such to other functional foods, particularly as the markets are developing rapidly. I would argue that the general results nevertheless have wider relevance: there are sociodemographic differences in use, but food- and health-related ideas and practices may be even more significant. Who the users of particular products are will ultimately depend on the product types, health effects and target groups – not to mention the marketing and the broader public discourse on food and health.

For the purposes of this dissertation the group discussions focusing on people's own experiences and the meanings they attach to food, health and functional foods yielded fruitful data. However, some limitations in the data should be noted. The discussants were members of the Consumer Panel maintained by the National Consumer Research Centre and they were all living in the Helsinki metropolitan region. The panellists can be described as active consumers who are interested in the views of other consumers and who, by taking part in the studies, want to make their voices heard on questions concerning consumption, production and the markets. The discussants were middle-aged men and women, many of whom used functional foods, and especially products designed to lower cholesterol. My data thus tell about the appropriation of functional foods by active and for the most part relatively well-to-do Finns who were probably more interested in food and

health than most Finnish consumers. Their ideas and conceptualisations have to be seen against this background. However, it is probably inevitable in studies of users of functional foods that the people willing to take part are those who have a personal interest in food and health. In order to gain a broader view, qualitative research is needed among different consumer groups with varying ideas and practices related to food and eating. Such research, especially among young, elderly and low-income consumers or sufferers from some specific disease, would most probably add new perspectives to the debate which the present research has not been able to cover.

Focus group discussions are but one method of analysing people's experiences and ideas, and they do have their limitations. They are best suited to people who are ready to interact with each other and who are ready to bring out their own views and negotiate them with others. Focus group discussions are data produced in interaction, which on the one hand generates a richness of perspectives but may on the other hand obscure strongly contradictory views. (Morgan 1997, 8–16; Kitzinger & Barbour 1999, 5.) In my study the participants seemed to be ready to discuss diverging perspectives and ideas freely and without conflict, agreeing that they all had their own experiences and views. However, it would be interesting to observe and study the use and usages of functional foods in real-life situations, in homes and at workplaces. Gaining entry to homes and establishing trusting and open relationships with interviewees is always challenging, especially in such intimate domains as food and eating. It would, using an ethnographic approach, nevertheless be possible to gain a richer understanding of everyday practices and to reflect on the links between these and the conceptual classifications of food and health. This would add to our understanding of the appropriation of functional foods by focusing on perspectives the present study was not able to address.

It is also necessary to point out that the data I have used were collected as part of other research projects and intended to serve the objectives of those projects. As far as I can see, the data have, however, served reasonably well as the material for this dissertation, since they have lent themselves to answering my questions from the perspective of appropriation. They have also raised new questions which future research into food and health cannot overlook. Such questions are: how will future nutritional guidance allow for the new concept of healthiness represented by functional foods, and how are people's everyday categorisations of healthiness and its relationship to other dimensions of food shifting and changing? Other questions concern the increasingly individualising notions of health and the new potential afforded by genetic and nutrition research, such as genetically-designed, health-optimising diets. As the life sciences produce new means and techniques that will significantly influence future everyday life, the task of the social sciences is to reflect on the social implications and consequences of these phenomena.

5 Healthy eating in transition

My central argument in this study is that consumers' ways of appropriating functional foods in the conceptual and practical sense take shape in a complex web of views, ideas and everyday practices concerning food, health and eating as a whole. In this concluding chapter I look at my findings and their more general significance from three perspectives. First, I situate functional foods in the discussion of the increasing variability of eating and examine the ways in which functional foods may change our categorisations of healthy foods. I then examine the possible reasons for Finnish consumers' relatively optimistic outlook on functional foods and analyse the significance of routines and trust in the appropriation of functional foods. In addition, I discuss the perspective of appropriation as a contribution to the discourse on functional foods. Finally I reflect on the possible future of the individualising eater by taking a look at the future predicted in the nutrigenomic visions.

5.1 Varied eating

Research into consumption and eating has, since the late 1990s, stressed variety and contradictions, and the variation of consumption as to time, place and context. Consumers have many social identities, and their activities are characterised by both routines and reflexivity. Since there is room in consumers' practices for the most varied interpretations and activities, eating patterns are all the more difficult to predict. Food is, for consumers, a polyphonous arena of struggle and a constant process of improvisation (Caplan 1996, 223). My findings indicating that consumers simultaneously adopt many discourses on food and nutrition, some of them contradictory (see IV, 392), are in line with those studies that have stressed the pluralisation of food regimes or food rationales (Germov & Williams 1999, 305, 307), the numerous rationalities related to food (Holm 2003, 534) or menu pluralism and the accompanying contextual freedom of choice (Beardsworth & Keil 1997, 68). Viewed from this perspective, the modern crisis of eating which Fischler terms gastroanomy may in fact be a sign that as the established rules have eroded, modern consumers have become more flexible in their relationship to food and more prepared to appropriate different situations (Beardsworth & Keil 1997, 68). My results suggesting that consumers are willing to try out various kinds of functional foods (II, 20–21)

without making them a permanent part of their diet, and that there are different rationalities in using functional foods (II, 23; IV, 392) speak of the same phenomenon: eating is becoming increasingly contextual, varied and unpredictable.

However, this does not eliminate the fact that not everyone has similar resources to enjoy all the variability, alternatives and tastes on offer in the market for food. There are social differences in the choice of functional foods as in other foods. My results concerning the four case products indicate that the use of functional foods is in most cases related to higher socioeconomic positions and that people with low education and lower occupational status are less eager to use the products (II, 22). In this respect my findings are in line with other studies on the users of functional foods (Anttolainen et al. 2001, 1367; de Jong et al 2004, 853). This would suggest that the voices praising functional foods as a means of promoting public health may overstate their significance for consumers. Should functional foods be adopted as part of the health promoters' 'tool kit' (Schroeder 2007, 257) the socioeconomic aspects cannot be overridden.

Despite the current emphasis on the increasing variability in eating, the moral codes and rules pertaining to food may, from the historical perspective, nevertheless be relatively immutable. Deep-rooted ways of thinking do not necessarily change even though the surface structures of society, the applications of rules and practices transform in time. (Ilmonen 1991, 181; Coveney 2000, 52.) The changes in food culture are subtle, mixing old and new, 'with one foot in tradition and the other in the present' (Mäkelä 2006, 33.) For us to appropriate new products, they must find a natural place in our daily eating patterns and in our cuisine. And as shown in article IV, we cannot rid ourselves of our existing interpretations and understandings of healthy food or of our normative expectations of what is a right and good diet. Thus the present ideals, views and practices of food production and consumption all influence future trends by sustaining and renewing eating habits. On the other hand, new products such as functional foods are an indication that it is not only the tradition and the present that shape our food culture but also what might be called 'hands reaching out to the future'. The concept of functional food, by definition, incorporates the idea that food and its healthiness are significant to the future of both the individual and society. The changes in the range of foods on offer reflect the constant transition of our cuisine and the social phenomena modifying production and consumption. (See I, 446.)

The simultaneity of different trends and consumers' greater-than-ever freedom to switch from one food regime to another means that healthiness also acquires different meanings, interpretations and applications. As this study shows, contemporary concepts of healthiness combine familiar principles of healthiness, our own world of experiences and scientific knowledge; applying them sometimes calls for compromises (IV, 388). Our ideas of

healthiness are a mixture of old and new, science and ideology. The nutritional education of recent decades has left its mark on consumers' categorisations of healthiness, for consumers seem to have come to regard as self-evident and almost unquestionable that healthy eating consists of a varied and balanced diet low in fat and salt (I, 447; IV, 388–389.) Meanwhile my results show that the canon of nutrition education is being challenged by personal experience: healthiness may in fact depend on individual factors, and food does not affect the health of all people in the same way. From the consumer's perspective, healthiness can also be generated by the gratification afforded by food, and deviations from healthy practices are permissible. Yet healthiness is still a moral issue: the person who observes a healthy diet displays self-discipline and control, the ability to abstain from excessive gratification and hedonism. (IV, 389–399.)

The debate surrounding the healthiness of functional foods may be seen as negotiation over what fits the gusteme of healthy and unhealthy. My results suggest that the new products have challenged the traditional concepts of healthy food and eating, but as they are gradually becoming established in everyday life, the healthiness they represent has begun to coexist with earlier concepts (I, 446; II, 23; IV, 392). Even users of functional foods may stress the traditional variety, balance and moderation in speaking of a healthy diet yet still take for granted that functional foods have some specific health effects (IV, 388). The categorisations of healthiness are, like other classifications of food, persistent but interpretatively flexible and variable in time (see Ilmonen 2007, 248). One interesting question from the perspective of these categorisations is what the relationship between functional foods and those traditionally regarded as healthy will be in the future. The diversification of food regimes and interpretations may mean that our classifications of healthiness are becoming ever more open and changeable. This could mean that everyday ways of thinking may, in the future, possibly no longer make a distinction between products designed as functional by research and development and foods that are 'naturally' healthy (cf. Urala 2005, 66). This could be an area of study that could help us to understand future patterns of eating and the new norms, ideas and expectations of consumers regarding food.

5.2 Functional foods: appropriation, routines and trust

The few studies that have examined consumers' views on functional foods in different countries have suggested that the Finns appear to be relatively favourably disposed to functional foods – at least compared with some other Europeans (see, e.g., Jonas & Beckman 1998). Even though my study does not allow for comparisons between countries, my findings support the view of Finns' optimistic outlook on functional foods. The relatively positive

public opinion and market success of functional foods can be explained in many ways. One explanation probably lies in the strong tradition of health-related public education and counselling campaigns in Finland (Heinonen 1998, 378–381; see also Jauho 2007, 348–371). In a society with a small and relatively homogeneous population it has been easy to spread the message of healthy eating through public education, campaigns and projects. Ever since the North Karelia project in the early 1970s there has been lively debate in Finland on the healthiness of food, and a decline in death from cardiovascular diseases as the people's eating habits have gradually become healthier (Prättälä 2003, 247; Kokko & Räsänen 1997, 26.) It indeed seems that Finns are health-orientated in their views on eating: according to a comparative European study, eating healthily is more important for Finns than for most other Europeans (IEFS 1996, 15) and Finns also more often acknowledge that they have reason to adjust their eating habits (Kearney & McElhone 1999, S136).

Another reason for the public optimism probably relates to the fact that Finland is a country in which functional foods have gained wide publicity ever since Benecol margarine was launched in 1995. After that, Finns quickly became familiar with the concept of functional foods; in my study, three out of four respondents said they had heard the Finnish equivalent of the term 'terveysvaikutteinen elintarvike' (functional food) before the interview (III, 42). In addition, the idea of health-promoting foods was probably not that peculiar to Finns: the xylitol chewing gum that prevents caries had come on the market in the mid-1970s. Xylitol in fact seems to have become so established that people no longer think of it as a functional food (Niva et al. 2005, 82).

Functional foods are one element in the broader debate on eating, food and health and the changes taking place in them. Thus the development, supply, marketing and use of functional foods are linked with a variety of other trends in society. They are part of the wider debate redefining the responsibility for health of the individual and/or society in which health promotion is increasingly seen as consumption and lifestyle choices (Bunton & Burrows 1995, 208). At the same time they are an attempt by the food industry to develop new, attractive products as a response to the increasingly keen competition and internationalisation of the market. In addition, now that public health is becoming more and more of an economic issue (Lupton 1995, 68), attempts to develop and produce foods that can help maintain citizens' health have the strong support of state and society. Functional foods have gained a significant position in the strategies of the Finnish food industry, but also in academic research programmes and public funding systems. They have become a national project helped on its way by what has by European standards been liberal marketing legislation. (I, 442.)

As shown above, trust is a major prerequisite for appropriation (I, 443; III, 42–43; IV, 390–391). It springs from the combined effect of many fac-

tors, being connected with everyday experiences of food and its quality, but also with views of the institutional frame within which food is produced. There is reason to believe that the public optimism about functional foods in Finland is related to the generally high level of trust in food and the actors of the food system (see Piiroinen et al. 2004, 52–53). On the one hand, this study suggests that Finnish consumers are relatively optimistic about functional foods (III), but on the other, it also reveals that consumers are not naïve in their trust: they also have concerns about the products' health effects, safety and possible side-effects (I, 444; III, 38, 42; IV, 391). This reflexivity and concern with food underline the fact that consumers are not passive recipients at the end of the production chain but active agents aware of the uncertainties relating to scientific knowledge, food production and control.

The earlier studies emphasising the significance of the old in the appropriation of the new (e.g., Powers & Powers 1984) find support in my results. When we hear about new products and when we see advertisements for them and place them in our shopping trolleys to try them out, we approach them through our existing categorisations. In distinguishing between functional and 'ordinary' healthiness, my interviewees drew on their established categorisations in an attempt to give meaning to the new and create a frame for its interpretation. The same mechanism applied when consumers reflected on the naturalness of or questioned the need for functional foods. In these reflections, consumers applied their existing notions of varied and balanced diets as opposed to the new and targeted healthiness of functional foods. (IV, 387–389.) The critical views expressed by consumers can be analysed as doubts levelled at functional foods or as reasons for resisting them, as has been done in many studies of consumer views and attitudes. If, however, appropriation is taken as the perspective, criticism appears to spring more from people's difficulty of fitting new products into the old categories, everyday life and its practices (see IV).

As Miller (2005, 41) has noted, research into human-object relations focuses on a mundane world abounding in contradictions, but people nevertheless appear to have little trouble reconciling and living with them. My study has shown that appropriation embraces many opposing dimensions simultaneously: good experiences and doubts, approval and questioning, expectations and things taken for granted. People may use functional foods but at the same time disapprove of the attempt to promote health by means of 'special things', or wonder if the products may have adverse health effects in the long run. They may think it is fun to try out new products but at the same time question the need for them. They may trust the quality and safety of products but nevertheless demand strict supervision and control. (I, 446; II, 21; III, 42; IV, 388, 390.) Such apparent inconsistencies are part of the mundane world of experience revealed on examining appropriation by various approaches, data and methods.

As social studies of technology have shown, one of the challenges of appropriation relates to the fact that the adoption of an object may be problematic if the object itself is seen as representing values to which the consumer does not wish to commit (Hirsch 1992, 222). In my study, such challenges were notable when functional foods were thought to violate the ideals surrounding healthy eating and the naturalness of food, to represent the increasingly technological production of food and to place the healthiness of food above its social and pleasure-giving aspects. (IV, 388; see also Niva & Jauho 1999, 48–55; Niva et al. 2000, 44). New products and technologies may be both aids and enemies and may carry a fundamental ambivalence. People may appropriate functional foods by making them part of their eating, yet they may also criticise them. One of my central results is that the conceptual and practical processes of appropriation do not necessarily go hand in hand or occur simultaneously. There may be dissonance between them, but this does not seem to trouble consumers very much (see IV, 391–392).

The use of the concept of appropriation has enabled me to look at the ways in which new products and technologies enter a dynamic situation in which the old and the new encounter and modify each other. This perspective stresses that functional foods do not invade a vacuum. They come into various everyday practices and either become or fail to be assimilated in eating habits, established customs and routines (I, 446; IV, 391). As with new technologies, functional foods require new skills and 'consumer capital' (Sassatelli 2007, 95–96) – an ability to judge what products suit whom and the purpose for which the products are intended, along with the ability to interpret the possible significance of a food as a means of promoting health. Adopting all this knowledge is getting increasingly complicated and calling for more and more effort on the part of the consumer. My results suggest that accumulating consumer capital on functional foods is an ongoing process in which developments in the market, new information about food and health and personal experiences of functional foods all play a part (IV, 392). The appropriation does not cease once a product is in everyday use. As the product world and life situations change, people are constantly appropriating new products, adapting them to their lives and modifying their eating habits. Consumers learn to use products in specific ways and incorporate them in their ideals of eating and health, and in this process functional foods may act as 'bridges' (see McCracken 1988, 104–117). They may serve as mediators in the striving for a better life, optimum health and happiness (II, 23). They represent an ideal of an individual who is healthy both now and in the future and who is capable of preventing diseases by his or her own choices.

The more practices supporting the adoption of products and technologies there are in everyday life, and the better they live up to expectations, the more likely people are to view them as necessary. Occupying a signifi-

cant role in everyday eating are the entrenched consumption routines (Sassatelli 2007, 108–109) the significance of which consumers may not even be aware of and which they rarely actively reflect on. The routines are not questioned because they have become an organic part of the structures of everyday life and are repeated more or less similarly from one day to the next. The more foods marketed as functional there are on the market, the more varied health effects there are ascribed to them and the more ordinary their use becomes, the less they are noticed (I, 446). After a while they may no longer be an active, deliberate choice but a habitual element of everyday life. It may well be said that Pantzar's (1997, 54) description of the role of routines and normalisation in the domestication of new goods applies at least in part to functional foods. Experimenting gives way to regular use, the new and special transforms into daily routines and novelty becomes familiar and safe. In time, the reasons for consumption may also change: instead of its health effect, the primary reason for using a product may be its good taste or, say, the liking for the product of some other family member (I, 445; II, 21).

We may, on the other hand, speculate whether functional foods have potential for altering everyday practices and the categorisations of food and health. The perspective of appropriation stresses that when new products are introduced into consumers' lives, existing products and the practices surrounding them also come in for scrutiny. My results do not directly suggest whether functional foods carry the potential for this. When starting to use, say, a cholesterol-lowering spread, people probably reflect on their other eating habits as well. In this case, however, the possible change in eating patterns is probably related to general health-related considerations rather than a single functional product. I would argue that most often functional foods are unlikely as such to cause notable changes in people's general eating habits. By contrast, the phenomenon signalled and articulated by functional foods in which eating becomes more rational and scientific may have significant consequences in everyday practices. Just as Chaney (2002, 74) has pointed out that convenience foods reflect cultural change in the home, family and work in modern society, moulding eating habits and households' expectations, so functional foods may be seen as reflecting a change in the healthiness ideals of food and in the roles, expectations and responsibilities existing at both individual and household level in relation to the healthiness of food (I, 442; III, 43; IV, 389).

In conclusion, my theoretical approach and findings suggest that there is more to the study of consumers and functional foods than analysing the acceptability of hypothetical product concepts with health claims or consumers' willingness to buy them. These have been in focus in many earlier studies on consumers and functional foods. By taking appropriation as a theoretical perspective I have been able to analyse functional foods in the context of people's ideas, views and classifications concerning food and eat-

ing as well as the practical use of the products. The perspective of appropriation has also helped me to locate the phenomenon of functional foods in the larger context of food, health and consumption in contemporary society and to bring a new approach to the discussion on functional foods. I hope to have shown that the analytical distinction between conceptual and practical appropriation provides a new and useful perspective in the study of food and eating, and in the study of functional foods in particular.

5.3 The individualising and responsible eater

New products and technologies may be fundamentally political, or they may have intentional or non-intentional political consequences (see Mackay & Gillespie 1992, 689–690). Functional foods are part of the trend that emphasises the individual's responsibility for his or her own life and health and in which the means of promoting health are no longer universal but individual and adjusted to personal needs. Many functional foods on the market are indeed targeted for an individualised eater. Functional yoghurts, spreads, breads, drinks and others do not require singularisation by much preparation or cooking. They do not need to enter the family dinner table but are more conveniently used, at breakfast or as a snack, for example. This way they are easy to appropriate into the daily routines of the individual and to use on a regular basis.

Functional foods also have nutritional-policy consequences, because the dietary guidelines and advice stressing diet as a whole will have to take a stand on the role of individual foods in the promotion and maintenance of health. Over the longer term, if functional foods acquire a significant status in health and nutrition policy and education, the consequences may be even more far-reaching. My results open up several questions: Will some consumer groups be excluded from using functional foods for financial and social reasons? How voluntary will the use or non-use of functional foods be? How will health care allow for citizens' unequal material, social and cultural resources to appropriate the increasingly detailed knowledge on food and health requiring ever greater expertise even of lay people?

The autonomy of the individual and the control of hedonism are salient ideals in Western consumption culture that views the consumer as an egoistic, forward-looking, self-governing hedonist seeking short-term gratification while at the same time bearing in mind more far-reaching well-being objectives. Consumers are sovereign as market actors only if they are sovereigns of themselves. Hedonism has to be tamed so that the individual consumer can enjoy commodities but in moderation, controlling and commanding his or her desires. (Sassatelli 2007, 155–156.) This view also dominates the debate on consumers as users of functional foods. The ideal consumer is one who wants to individually tend his or her health and make

health-promoting choices by purchasing functional foods while at the same time retaining control over any conflicting hedonistic desires. The findings of this study demonstrate the presence of the same dilemma between health and pleasure in the everyday life of consumers. People balance between proper eating and indulgence while at the same time rationalising hedonism as a wellness-promoting part of eating. (IV, 392.)

The same ideal can be detected in the visions of eating that have accompanied the rapid advances in genetic research in recent years. It has long been known that although nutrition affects health and risk of disease fairly predictably in the population as a whole, the connection is complex at individual level. The effects of nutrition vary individually, even allowing for such background factors as age, gender and lifestyle. Advances in recent years in medicine and nutritional science and genetic research have produced a new discipline, nutrigenomics or nutritional genomics (see, e.g., Kaput et al. 2005) that studies the interaction between hereditary factors and nutrition and their effect on the health of individuals. Genetic knowledge may in the future permit the identification and combating of health risks on an increasingly individual level. (I, 448; III, 43.)

The expectations of the scientification of eating and individualising healthiness are great. The US International Food Information Council (IFIC) predicted some years ago that 'the time is fast approaching when it will be possible to use genetic testing to inexpensively determine an individual's ideal health-promoting diet' (IFIC 2001, 4). In Finland, too, visions have been presented of tailored diets made possible by nutrigenomics and allowing the individual to control his or her future health risks (Hjelt et al. 2002, 40), and functional foods have been regarded as a logical step towards the personalised diet (Korhonen 2005, 9). One vision of the future is that the combination of genetics, knowledge of consumers' preferences and information technology might permit shops to install information systems capable of recognising customers and advising them how to choose the foods best suited to their nutritional needs and taste preferences (Moskowitz et al. 2005, 187). Commercial genetic tests and nutrition recommendations based on genetic profiles are already available to consumers (e.g., www.sciona.com).

The results of my study have pointed to the fact that the appropriation of even single health-promoting foods is a process involving a variety of aspects that consumers reflect on and that play a role in making the products 'one's own'. Whole health-optimising diets using a variety of functional and other foods would imply an appropriation process of a different scale. The enthusiastic visions not only often overlook the ethical problems accompanying genetic information and its use but also forget to consider what effects personal diets would have on eating practices and on everyday life more generally. Analyses of whether people in fact want genetically-tailored nutrition instructions or of what significance nutrigenomics

may have in promoting public health have so far featured little on research agendas. (See Chadwick 2004, 166.) Based on a small-scale and preliminary investigation in this area, I found that for consumers, nutrigenomics seems to carry both optimistic expectations of new ways of promoting health and pessimistic visions of health penetrating deeper and deeper into everyday life, and of loss of personal autonomy and the sociality of eating (see Heiskanen et al. 2007, 498–499). If personally tailored diets designed to optimise health materialised, they would be a new and radical stage in the trend towards the individualisation of eating. Health promotion would become a life-long project drawing on genetic data and awareness of one's own risk of disease. Risk management would become an essential and focused part of eating and people's relationship to health. The question is, can food be reduced to health-optimisation even in the future?

Meanwhile the sociality and individuality of eating are acquiring new meanings as growing demands for ethicality and both environmental, cultural and social sustainability are being levelled at food production and consumption. Healthiness and in the future possibly even genetically tailored diets may be important to people, but these individualising tendencies will have to contend with other expectations and demands concerning food. If the 'recombinant' (Belasco 2006, 219–220) food of the future is enjoyable, healthy and health-promoting, environmentally sustainable, fairly produced and culturally acceptable, many wishes will come true. Yet, we may ask, can all utopias be realised simultaneously? We will have to make choices both politically and as consumer-citizens, and try to reconcile our divergent wishes and expectations. For the consumer, food and eating represent an arena of today's increasingly complex life, and for the researcher a field for study of unbounded richness.

Notes

1 Nutrition claims suggest that a food has particular beneficial nutritional properties relating to its energy value or its nutrients or other substances. Health claims suggest that there is a relationship between a food or its constituents and health. Health claims are divided into two subgroups, 1) those referring to the role of a substance in growth, development and functions of the body; psychological and behavioural functions; or slimming or weight-control, and 2) those referring to reduction of disease risk and to children's development and health. Reduction of disease risk claims suggest that a food or one of its constituents significantly reduces a risk factor in the development of a human disease. Under the Regulation (No. 1924/2006), Member States are obliged to compile lists of existing health claims at the beginning of 2008, and the Commission will use these as a basis for a list of health claims to be approved within the European Union in 2010. The disease risk claims will have to undergo a separate approval procedure.

2 Kopytoff (1986) uses the term 'commoditisation' instead of 'commodification'.

3 Miller (1987, 28) points out that Hegel did not in fact use the term objectification (Vergegenstandlichung) but Entäusserung, which is nowadays translated as alienation. Since alienation has acquired strong negative associations with Marxism, Miller prefers to use the term objectification.

4 There is a typing error in the original article III, p. 41, right-hand column, around mid-page, where it is stated that 'consumers with the least education – – demanded stricter regulation than those with more education'. The statement on the same page, left-hand column, first paragraph, stating that 'those with a high level of education were – – more demanding as to regulation and research than people with the least education' is correct.

5 The term 'user' will in the following always refer to the regular consumption of functional foods. Regular use was defined in the logistic regression models as the weekly or daily use of each case product. This group was compared with those who did not use the product at all. Occasional users were excluded from the analysis in order to reveal the differences between users and non-users more clearly.

6 The combination of different data, methods or theories, or the collaboration between researchers representing different traditions has been known since the 1970s as triangulation. The term was launched by Norman Denzin in 1970, when he considered various ways of enhancing the validity of research. (Denzin 1970, 301.) The concept of triangulation, and especially the idea that it improves the validity of research – that it yields a more consistent, complete or correct picture of the object of the study – has since been criticised and regarded as naïve (see, e.g., Brannen 1992, 13; Coffey & Atkinson 1996, 14). Denzin himself has subsequently presented triangulation as an attempt to provide a deeper understanding of the phenomenon for study. It does not mean seeking to attain objective truth about reality. Understanding triangulation as a 'crystal' or as a creative process can broaden the whole concept: 'Triangulation is the display of multiple, refracted realities simultaneously.' (Denzin & Lincoln 2000, 6.)

7 According to Taloustutkimus Oy, there were several reasons for the low response rate. First, the use of quota sampling lowered the response rate. This was because there were quotas for gender (two classes), age (eight classes) and place of residence (twelve classes), which meant that a predefined number of respondents fulfilling the criteria for age, gender and place of residence were needed for a total of 192 strata. Second, according to Taloustutkimus the duration of the interview has a significant effect on people's willingness to respond. In this case, the respondents were told that the interview would last about 20 minutes. Third,

Taloustutkimus had to collect 248 additional responses due to an error in the original sampling procedure. The new responses replaced an equal number of original responses which further diminished the response rate. Fourth, the response rate is generally lower in studies that focus on relatively new phenomena, such as functional foods. (See Niva et al. 2003, its Appendix 3 for details.)

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Appendix 1.

The questionnaire used in the computer-assisted telephone interview (CATI)

(Taloustutkimus Oy programmed the questionnaire and conducted the interviews. The codes of the questions come from the computer-programmed questionnaire.)

Hello/good morning/good evening, this is X. X. from Taloustutkimus. We are investigating consumers' views on food and functional foods. Would you have time to respond? The interview takes about 20 minutes.
yes 1
no 2 → END OF THE INTERVIEW

Q5 What year were you born in?
GIVE A VALUE BETWEEN 1900 AND 1999
IF > 1987 → END OF THE INTERVIEW
IF THE STRATUM IS FULL → END OF THE INTERVIEW

Q7 Which province do you live in?
Uusimaa (Uusimaa, Itä-Uusimaa) 1
Häme (Päijät-Häme, Kanta-Häme) 2
Tampere Region 3
Kymi/South Karelia 4
South-West Finland 5
Satakunta 6
Ostrobothnia (South Ostrobothnia, Ostrobothnia, Central Ostrobothnia) 7
Central Finland 8
Savo (Southern Savo, Northern Savo) 9
North Karelia 10
Kainuu (Northern Ostrobothnia) 11
Lapland 12
DK/does not want to answer 13 → END OF THE INTERVIEW

Q10 These days people talk a lot about the healthiness of food. How healthy do you think the following foods are? Please respond on a scale from one to five so that healthiness increases when going up on the scale. On the scale 1 = not at all healthy and 5 = very healthy.F5=DK (ROTATED ORDER)
1) organic semi-skimmed milk
2) Gefilus milk
3) Rela ice cream
4) whole milk
5) skimmed milk

6) chicken breast without skin and bone
7) Benecol frankfurter
8) beef tenderloin
9) sausage
10) low-fat frankfurter
11) rye bread
12) iLove oat crisp
13) bun (sweet)
14) egg and rice pasty
15) low-salt white bread
16) blackcurrant juice
17) Fenix health drink
18) xylitol chewing gum
19) sugared soft drink
20) sugar-free soft drink
21) Finnish berries
22) genetically modified tomato
23) dark chocolate
24) avocado
25) vitamin C enriched pastille

Q20 Next I'm going to read out some statements about food and its production. Please say after each statement to what extent you agree or disagree with it. The options are strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree.
MARK: STRONGLY AGREE = 5, SOMEWHAT AGREE = 4, NEITHER AGREE NOR DISAGREE = 3, SOMEWHAT DISAGREE = 2, STRONGLY DISAGREE = 1. F5 = DK. (ROTATED ORDER)
1) I don't pay much attention to the healthfulness of food.
2) It is important to follow experts' instructions on healthy diet.
3) I prefer organically produced foods.
4) It is good that modern technology is used to improve the healthfulness of foods.
5) The use of gene technology should be promoted in food production.
6) The increasing food selection makes it difficult to choose food.
7) I prefer to eat foods that are processed as little as possible.
8) I often eat ready meals.
9) Milk containing lactic acid bacteria is healthier than ordinary milk.
10) I pay attention to the fibre contents of foods.
11) It is unnatural that foods are constantly modified.
12) Processing foods destroys their natural healthfulness.
Thank you, these were the statements.

Q30 Have you heard about 'health-affecting' or functional foods before this interview?
yes 1
no 2

Q50 A food is considered to be functional if, in addition to the usual nutritional effect, it has some other effect that maintains health or decreases the risk of disease. We are interested in the use of some functional foods. Next I'm going to present questions on such products. Have you used the following foods within the past year?
(ROTATED ORDER)
1) Gefilus products, such as milk, sour milk, yoghurt, juice or daily dose drink
Yes 1; No 2; DK 3
2) Linobene products, such as meatballs, frankfurters or liver sausage
Yes 1; No 2; DK 3
3) Benecol or Becel pro.activ margarine or spread

Yes 1; No 2; DK 3
4) Xylitol chewing gum
Yes 1; No 2; DK 3
5) Rela products, such as yoghurt, juice, ice cream or cottage- or light cheese
Yes 1; No 2; DK 3
6) Benecol products of Atria, such as broiler meatballs, frankfurters or potato salad
Yes 1; No 2; DK 3
7) Evolus fermented milk drink
Yes 1; No 2; DK 3
8) Yosa fermented oat product
Yes 1; No 2; DK 3
9) Elovena Plus rolled oats and bran (not the ordinary Elovena)
Yes 1; No 2; DK 3
10) Hyvää Päivää drinks
Yes 1; No 2; DK 3
IF Q50 ALL ANSWERS 2 OR 3 → Q250
THOSE PRODUCTS WITH 1 → Q55

Q55 How often do you use product X?
(ROTATED ORDER OF PRODUCTS)
I have tried it 1 → THE NEXT PRODUCT
I use it occasionally 2 → THE NEXT PRODUCT
I use it about once a month 3 → THE NEXT PRODUCT
I use it weekly 4 → Q57
I use it almost daily 5 → Q57

Q57 Why do you use the product?
DO NOT READ OUT THE LIST. THE FIRST-MENTIONED OR MOST IMPORTANT REASON IS MARKED.
willingness to try 1
good taste 2
well-being of teeth and mouth 3
chewing gum helps to concentrate/is nice 4
another member of the family uses the product 5
suitable price 6
a health-care professional recommended (doctor or nurse) it 7
a friend or family member recommended it 8
it is healthy or functional or more healthy (than others) 9
well-being of the stomach 10
lowering of blood pressure 11
lowering of cholesterol 12
there is some useful ingredient added to the product (such as lactic acid bacteria, probiotics, fibre [for instance flax/lignan, beta-glucan], plant sterol/plant stanol, xylitol, vitamins and minerals, vegetable fats) 13
the amount of some ingredient has been reduced or the ingredient has been removed (such as fat, salt, sugar, lactose, gluten; low-fat, lactose-free) 14
DK 15
other reason, which? 16 _____

Q59 Has the use had an effect on your well-being?
yes 1 → Q61
no 2 → THE NEXT PRODUCT
DK 3 → THE NEXT PRODUCT

Q61 In what way?
DO NOT READ OUT THE LIST. THE FIRST-MENTIONED OR MOST IMPORTANT REASON IS MARKED.
my cholesterol values have improved/lowered 1
my blood pressure has lowered 2
my teeth have stayed in good condition 3
my stomach feels better 4
my skin/hair is in better condition 5
I feel better than before 6
I believe that the product is beneficial in the long-term (reduces the risk of disease or prevents falling ill) 7
other effect, which? 8 _____

(IF IN Q50 ALL ANSWERS ARE 2 OR 3)
Q250 You have not regularly used any of these products (or you have only used xylitol chewing gum regularly). Why haven't you used any of the products?
DO NOT READ OUT THE LIST. IT IS POSSIBLE TO MARK MORE THAN ONE OPTION. USE 'INSERT' TO ADD OTHER OPTIONS.
the products are expensive 1
I am not interested in the products 2
I have no reason to change my old habits 3
I don't think that the products would have an effect 4
I don't know about the products 5
the availability of the products is poor 6
I don't eat these types of foods (milk, cereals, meat, convenience foods, sweets/chewing gum) 7
the products do not fit in my diet 8
I don't believe in the safety of the products 9
other reason, which? 10 _____

Q260 Do you use some other foods not mentioned above that you think are functional?
yes 1 → Q265
no 2 → Q270
DK 3 → Q270

Q265 Which products do you use?
WRITE DOWN THE ANSWER.

Q270 Do you wish that new functional products would come into the shops?
yes 1 → Q280
no 2 → Q290
DK 3 → Q290

Q280 What kind of health effects do you wish these products had?
IT IS POSSIBLE TO MARK MORE THAN ONE OPTION. DO NOT READ OUT THE LIST. USE 'INSERT' TO ADD OTHER OPTIONS. F5=DK
issues relating to the contents of the food (such as no additives, low-salt, fat content) 1
overweight/losing weight 2
cholesterol/blood lipids 3
stomach/digestion 4
blood pressure 5
infections (cold, cough, fever) 6
headache/migraine 7
tiredness 8
insomnia 9
teeth and bones 10

skin 11
balancing the blood sugar 12
general well-being, maintaining good health 13
recovering from exercise 14
memory 15
mood, state of mind 16
problems relating to aging 17
prolonging lifetime 18
other, which? 19 _____

Q290 Next I'm going to read out some statements about functional foods. Here functional foods are understood as foods that have been marketed as 'health-affecting' or functional. Please say after each statement to what extent you agree or disagree with it. The options are strongly agree = 5, somewhat agree = 4, neither agree nor disagree = 3, somewhat disagree = 2, strongly disagree = 1.
MARK WITH NUMBERS. F5=DK. (ROTATED ORDER)
1) I am happy to pay more for functional foods than for conventional ones.
2) The increase in functional foods on the market is a good trend.
3) I don't buy functional foods.
4) People would be healthier if they used more functional foods.
5) You can hardly prevent diseases by eating functional foods.
6) Functional foods are bad for our eating.
7) It is good if you can replace medicines with functional foods.
8) The authorities must especially supervise the marketing of functional foods.
9) I believe that using functional foods too much can be harmful to health.
10) I believe that the safety of functional foods has been examined carefully enough.
11) Functional foods are not good for children.
12) Functional foods have improved my well-being.
13) For healthy people functional foods are unnecessary.
14) I trust that functional foods have the promised effects.
15) I believe in the effects of a functional food if a doctor or a nurse recommends using it.
16) Finnish functional foods are of high quality.
17) I think functional foods should not be allowed on the market without prior approval by authorities.
18) The effects of foods marketed as functional have to be scientifically substantiated.

Q300 Gender
MARK, DON'T ASK!
woman 1
man 2

Q320 Which is your occupational group?
READ OUT THE LIST IF NEEDED.
executive position 1
upper white-collar worker 2
lower white-collar worker 3
blue-collar worker 4
farmer 5
(other) entrepreneur or self-employed person 6
student 7
retired 8
homemaker 9
unemployed 10
other 11
DK 12

Q330 What is your education?
READ OUT THE LIST IF NEEDED.
comprehensive/middle/elementary school 1
vocational school 2
upper secondary school 3
college level 4
polytechnic 5
university 6

Q340 What is the current phase of life of your household?
one-person household 1 → Q360
a couple with no children under 18 living at home 2 → Q360
a couple with children under 18 living at home 3 → Q350
a single parent household 4 → Q350
other 5 → Q350
DK 6 → Q350

Q350 Are there children under school age in your household?
yes 1
no 2

Q360 What is the postal code of your place of residence?
GIVE THE VALUE.

Q370 Which of the following best describes the way you prepare meals on weekdays?
mainly self-made (from scratch or heat up self-made food prepared earlier) 1
often use semi-finished foods (e.g., marinated meat slices or frozen vegetables) 2
buy ready meals (e.g., microwave meals or convenience foods) 3
eat mainly outside the home (at home, mainly snacking) 4
DK 5

Q380 How about weekends?
mainly self-made (from scratch or heat up self-made food prepared earlier) 1
often use semi-finished foods (e.g., marinated meat slices or frozen vegetables) 2
buy ready meals (e.g., microwave meals or convenience foods) 3
eat mainly outside the home (at home, mainly snacking) 4
DK 5

Q390 Do you follow a special diet?
no 1 → Q410
yes 2 → Q400
DK 3 → Q410

Q400 What kind of diet is it?
IT IS POSSIBLE TO MARK MORE THAN ONE OPTION. DO NOT READ OUT THE LIST. USE 'INSERT' TO ADD OTHER OPTIONS.
vegetarian 1
low-lactose or lactose-free 2
low-fat 3
avoiding saturated/hard fat 4
low-salt or salt-free 5
gluten-free 6
avoid certain foods (e.g., nuts, fish) because of allergies 7
other, which? 8 _____

Q410 Do you use vitamin or mineral supplements or natural products?
IF YES: MARK WHETHER REGULARLY OR OCCASIONALLY
yes, regularly 1
yes, occasionally 2
no 3

Q420 Do you try to lower you blood pressure levels?
yes, at present 1
yes, I did earlier 2
no 3

Q430 Do you try to lower your cholesterol levels?
yes, at present 1
yes, I did earlier 2
no 3

Q440 Do you control your weight?
yes, at present 1
yes, I did earlier 2
no 3

Q450 Do you feel that you should take better care of your health in general than you do?
yes 1
no 2

Q460 How often do you take exercise?
READ OUT THE LIST.
daily or several times a week 1
weekly 2
occasionally 3
hardly ever 4
DK 5

Q470 Do you think that functional foods are...
F5=DK
completely unnecessary 1
quite unnecessary 2
not unnecessary or necessary 3
quite necessary 4
very necessary 5
DK 6

Q800 Thank you for your reply and your interest. You were interviewed by X. X. from Taloustutkimus Oy. Have a good day/evening!

Appendix 2.

Discussion guide used in the focus group discussions

(The time allocated for each theme is shown in brackets. Notes for the facilitator are in italics. The questions in parentheses were extra questions that could be used in specifying the first question. The subquestions under each numbered question were presented if time permitted. The questions were not necessarily discussed in the same order in the discussions. If time was running out, some questions were missed out.)

Introduction and welcome [17. 30–17.40]

- introduction of the researchers (Mari Niva, Sanna Piiroinen) and the assistant (Eija Niiranen)
- in this study we are interested in consumers' views on healthy eating and functional foods
- the study is part of a larger study carried out by several research organisations (VTT Technical Research Centre of Finland, the University of Helsinki, Agrifood Research Finland (MTT) and the National Consumer Research Centre (NCRC)); each of them carries out parts of the study with different methods
- the data collected here are used only for research at the NCRC and in Mari's dissertation
- a publication will come out in the summer
- the discussion is confidential; the names of people participating will not be published
- the discussion will be tape-recorded and videotaped (the video is to ensure that the discussion is recorded if anything happens to the audiotape); all tapes will remain with us and they will only be used for research purposes
- the discussions will be transcribed and analysed
- the discussion will take between 1.5 and 2 hours
- at the end we will reimburse your travel expenses and you can answer any questions about this study, ongoing studies at the NCRC or other matters
- the idea is that you can discuss freely; you don't have to ask permission to speak
- however, we hope that you won't all speak at the same time as it makes transcribing the tapes difficult
- do you have any questions for us now?

Let's start then. The discussion will proceed in broad themes. First we will talk about your own ways of eating, then generally about healthy eating and after that about functional foods. Now we would like a voice sample from each of you for the tape so that it will be easier for the transcriber to recognise you. Please would you each say your name and say briefly why you were interested in taking part in this study.

I Own eating patterns [17.40–17.50]

1. What things are important to you in food and eating? (What things do you pay attention to in food?)
2. How would you describe your own eating habits?

II Healthy eating and nutritional problems [17.50–18.25]

1. In your opinion, what is healthy eating like? (What is healthy food like?)
   - How about unhealthy eating, what is it like?
2. Do you feel that you eat healthily? (What has made you eat healthily?)
   - Is it easy to eat healthily?
3. What do you think, what kind of people eat healthily?
4. Are you concerned about the consequences of unhealthy eating?
   - How could the problems relating to unhealthy eating and its consequences be alleviated?
   - Which parties do you think are responsible for alleviating or finding solutions to the problems? *If the discussants only mention individuals' own responsibility, ask about the responsibility of manufacturers and authorities.*
5. Do you think that a healthy diet can prevent diseases?
6. Are you interested in information on food and health? (Where do you get it from?)
   - Is it easy to apply the information?

III Functional foods and the healthiness of food [18.25–18.55]

Now we've talked about healthy eating. How about functional foods then? There are quite a lot of functional foods in the shops now and some of them are maybe familiar to you. First we could talk a bit about what kinds of foods you think are functional.

1. What kinds of foods do you think are functional? *Remember: products and their characteristics.*
   (What kinds of foods are not functional?)
2. Are there things in common between 'ordinary' healthy foods and functional foods? What?
3. Are there differences between 'ordinary' healthy foods and functional foods? What?

If the discussants should wonder what 'health-affecting' really means, then point out that even the experts may have different opinions on what counts as functional. Often the experts define functional foods as products that have been specifically developed to be functional so that they try to reduce the risk of diseases or otherwise maintain health.

4. Do you think that functional foods are part of a healthy diet?
5. To whom or to what kind of people are functional foods useful or necessary?
6. Do you think there are problems relating to functional foods?
7. Do you believe that functional foods can reduce illness or improve health?
8. What is the difference between using functional foods and medicines?
   - Do you think that functional foods could replace medicines or help to reduce the use of medicines?

IV Experiences of functional foods [18.55 –]

For regular or occasional users of cholesterol-lowering foods containing plant sitostanol or sitosterol:

When we recruited you for this study we asked you how often you use cholesterol-lowering foods. You all replied that you use these products regularly or occasionally or that you have at least tried them.

1. What kinds of experiences do you have of functional foods?
   - Which products have you used?
   - What made you try the products?
   - Do you feel that the products have been useful to you?

2. In what way do you think the use will affect your health in the future?
3. Do you think that you will use functional foods (the ones you have used or others) in the future?

For non-users of cholesterol-lowering foods containing plant sitostanol or sitosterol:

1. Do you have experiences of functional foods? *If yes,*
   - Which products have you used?
   - What made you try the products?
   - Do you feel that the products have been useful to you?
2. Is there a particular reason you have not used functional foods?
   (For instance, when you were recruited for the study you said that you didn't use cholesterol-lowering foods.)
3. Do you think that you could use functional foods in the future?
   - What kinds of products? In which situation?

For all:

4. Do you think that new functional foods should be developed?
   - What kinds of effects should they have?

Recently there has been discussion about the fact that genetic research produces increasingly detailed knowledge of how heredity influences the individual susceptibility to fall ill. At the same time more and more is known about the ways in which nutrition affects health. In the future it may be possible to get personal, tailored diet instructions or recommendations that are based on genetic research.

5. How do feel about this?
6. Would you be interested in such information (Do you think you would use the instructions? Do you think it would change the way you eat?)

Finally we could go on creating some new ideas. You talked a bit about what kind of functional foods you would hope for or what kinds of products might be useful. Now you can stretch your imagination and think about a really magnificent product you might use. What might it be like?

Now we have gone through all the themes. Do you have any questions?
Switch off the recorders.
Thank you for participating!
Travel expenses.